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PSYCHOLOGICAL CONSEQUENCES OF SUPERSTITIONS IN SPORT

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## DECLARATION

I declare that this thesis is my own research work carried out in the United Kingdom under the supervision of Professor David Lavalley and Dr. Peter Coffee, of the University of Stirling, Scotland, and Dr. David Tod of Aberystwyth University, Wales. This thesis has not been submitted in another institution for the award of another degree. References cited in this work have been fully acknowledged.

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## **ABSTRACT**

Superstitious thoughts or behaviours have been demonstrated to occur frequently and persistently among students and athletes. One major limitation in the superstition in sports literature is that researchers attempt to measure only negative superstitious beliefs; however, to date, little is known about types of superstitions, how superstitions are developed and maintained, their psychological functions and malfunctions, or their behavioural consequences. Study 1 demonstrates the widespread prevalence of superstitions within the present population of undergraduate student athletes in British and Ghanaian universities, and explores several specific superstitions that appear to be particularly common. There were significant main effects of gender and nationality on both positive and negative superstitious beliefs. British student athletes tended to endorse both types of superstition to a greater extent than Ghanaian student athletes, whereas Ghanaian student athletes engaged in superstitious behaviour more than British student athletes. In Study 2, the results suggested that people may enact their positive superstitious beliefs and religion as coping mechanisms and as secondary control strategies to offer them the comfort of feeling in control under conditions of impending failure. Results from the two qualitative studies (Studies 3 and 4) demonstrated some support for elite footballers' engaging in rituals which serve a functional outcome. These findings suggest that superstitious and religious behaviour can protect against debilitating interpretations of anxiety by increasing self-confidence or allowing athletes to perceive symptoms as controllable and facilitative. Interestingly, athletes who have acquired their superstition by means of conformity note that they experienced cognitive dissonance. Dissonance emerges when two beliefs are inconsistent. Apparent contraction between an athlete's personal

superstitious behaviour and their teams' superstitious behaviour may give rise to self-doubt, which can erode the athlete's confidence and create other negative psychological consequences to team process. Study 5 provided empirical evidence for the notion that activation of personal superstition improved performance more than conforming to other superstitions, and that performance was better than that of athletes in the control group. In this regard, the reported findings uniquely contribute to our understanding of superstitions and their effects on psychological as well as behavioural consequences. The present findings are in line with previous research on the psychological functional benefits of superstition. At the same time, these findings suggest fresh interrogations for future research on the subject of superstitions. Possible applications to the student athletes and professional athletes are discussed.

## **DEDICATION**

I dedicate this work to all the street children all over the world. May your light shine someday, and may you realise your aspirations.

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## CHAPTER 1: INTRODUCTION

*“...thanked his players – and God. After his side 5:0 triumph over Stoke City. Last night when I went to Mass my priest was praying for the Wanderers. So I knew He was onside”*

*Owen Coyle (Bolton Wanderers Manager, January 2010-October 2012).*

Why will you seek Mother Luck if you have prepared well for your game or end of semester exams? Fortunately or unfortunately, superstition permeates all human doings, from the archaeologist to the zoologist (Vyse, 1997). Unfortunately there is not much clarity about the exact meaning of superstition in sport psychology. Superstition has been defined as “Unreasoning awe or fear of something unknown, mysterious, or imaginary, especially in connection with religion; religious belief or practice founded upon fear or ignorance” (Oxford English Dictionary). Maller and Lundeen (1933a, p.321) supplied the following definition: “A superstitious belief is one that ascribes causal relationships to the phenomena and objects which bear no such relationship to one another.”

Heath (1948) has attempted to describe in a more meticulous manner what is meant by “unreasoning awe”, and proposes that (p.40): “If there is evidence for a belief, if its probabilities are calculable and reasonable amount, then there is nothing irrational in taking a chance in believing it. But if the odds cannot be estimated, or if they are grossly weighted against what is believed, then the belief is a superstition.”

Scheibe (1970, p.123), for example, stated: “A superstition may be said to exist whenever an individual persistently or repeatedly behaves as if his subjective estimate of the result of that behaviour is significantly different from an objective (scientific) estimate of the effect of that behaviour.” Scheibe places a little more emphasis on the empirical manner in which

the rationality or otherwise of a belief may be determined. Researchers have also studied superstition in sport, which focuses on “actions which are repetitive, formal, sequential, distinct from technical performance and which the athletes believe to be powerful in controlling luck or other external factors” (Womack, cited in Bleak & Frederick, 1998, p.2). This of course gives credence to Scheibe’s notion of repetitive behaviour. Such an approach builds on the seminal study by Skinner (1948), who claimed that stereotyped idiosyncratic responses emitted by pigeons that had adventitiously been paired with reinforcement were “superstitious” in nature.

A lot goes into being an elite athlete—hard training, raw talent and the ability to perform under pressure. But for some athletes, superstitious behaviour gives them an added edge they need to get into the zone and cope with the pressure associated with elite sport. This explains why arguably the greatest professional basketball player of all time, Michael Jordan, was known for a specific superstition. While leading the Chicago Bulls to six NBA championships during his legendary career, the five-time most valuable player (MVP) wore his University of North Carolina shorts under his uniform in every game. Jordan led UNC to the NCAA Championships in 1982 and believed the mesh marvels brought him luck. In order to cover his lucky pair, Jordan began wearing longer shorts, which inspired a trend in the NBA.

Another highly respected athlete who engages in superstitious behaviour is Serena Williams. After her fifth Wimbledon win in 2012 (marking her 14th Grand Slam title) the legendary John McEnroe declared Serena Williams to be “the greatest female player that’s ever played this tennis.” Chris Evert made the same claim in her post-match commentary, that Williams is the most feared female tennis players of all time. Serena Williams believes

much of her winning ways are the result of closely followed superstitious behaviours. For the 31-year-old, these superstitions include bringing her shower sandals to the court, tying her shoelaces a specific way and bouncing the ball five times before her first serve and twice before her second. The five-time Wimbledon and Australian Open champ, four-time US open champ and gold medallist at the London 2012 Olympics will even wear the same pair of socks during a tournament run. Williams is so set in her superstitions, she has chalked up major losses to not following her own routine correctly. The 44 singles championships winner, 22 doubles championships winner, and gold medallist at the 2000/2008 Olympics, maintains that she lost in the 2007 French Open quarter-finals to the then world number one Justine Henin only because she failed to stick to her set of rules: “I didn't tie my laces right and I didn't bounce the ball five times and I didn't bring my shower sandals to the court with me. I didn't have my extra dress. I just knew fate, it wasn't going to happen” (Camber & Newling, 2007, “Superstitions that serve me well, by Serena Williams,” para. 5).

Professional sporting competitions are not only high-stakes events, but are notoriously unpredictable. No matter how well an athlete performs, the outcome of a game or match is never entirely under his or her control. Athletes have to face opponents or conditions (e.g. weather, equipment quality) that are determined by external, uncontrollable factors. This lack of control often leads to a lack of confidence (Abramson, Seligman, & Teasdale, 1978; Maier & Seligman, 1976), which can affect performance negatively. What can we do to retain a feeling of control? In the face of this inadequate control, it is not surprising that professional athletes and spectators alike take part in often elaborate superstitious behaviour to ward off bad luck and ensure victory.



Anthropologist Malinowski (1955) maintains that superstitions are psychologically necessary for human existence and should not be dismissed as futile primitive beliefs. According to his “theory of the gap”, magic/superstition fulfils some vital functions within any given culture, as it helps fill the void of the unknown and thus mitigate anxiety. Such a need is so strong in mankind that, in the words of Scheibe & Sarbin (1965), “where he lacks truth and needs it, [man] makes it up, somehow”. It is not surprising because in our attempt to find meanings and understanding of the unknown, people resort to superstitious actions or beliefs. This explains Cohen et al.’s (1959) findings that individuals are likely to prefer distorting facts or logic to discarding their superstitions.

Uncertainty is an inescapable feature of an athlete’s career experience, and sportspeople approach it in different ways. Some explain their circumstances by providing information from supernatural sources; hence superstition offers an illusion of control. By allowing access to a supposedly higher knowledge, it gives the false impression of relieving individuals of their physical limitations (Tsang, 2004).

Superstitions are not uncommon in sport (Foster, Weigand, & Baines, 2006), and football and its players are no exception to this rule. From the greatest in the sport to the myriad others hoping to become so, weird practices/routines before, during or after the game are as much a part of the sport as playing the game itself. Not long ago, Goran Stevanovic, coach of the Ghanaian national football team, attributed his team’s failure to win the Africa Cup of Nations 2012 (AFCON) to players who try to outdo each other using black power or juju. In his report after the tournament, in which the Black Stars finished fourth, Stevanovic said, “We all need to help in changing some players’ mentality about using black power to destroy themselves”.

Ghana is not the only country that seems to be suffering from this mentality. In fact, much of the African football-loving population seem to sway to the notion that black magic or superstition (juju) plays an important role in winning a football match. German filmmaker Oliver Becker, who made the film *Kick the Lion—Football and Magic in Africa* depicting the use of juju in football, says, “Traditional medicine and religion play an important role in most African societies. In 2002, the BBC reported that the Ivory Coast government had to settle a 10-year dispute with witchdoctors who claimed that they had a hand in the team’s triumph in African Nations Cup in Senegal in 1992. The doctors were apparently hired by the Ivory Coast Sports Minister. Cameroon’s then Minister of Sport and Physical Education, Michel Zoah, also clearly indicated that the government was sending out witchdoctors as team staff as he said during the press conference that the team’s failure was due to many things, one of which being that the witchcraft was not effective”.

Sociological and psychological evidence documents that superstition still enjoys surprisingly high levels of popularity in modern Asian, Africa and Western societies, and it influences attitudes and decisions in many spheres of daily life (Tsang, 2004; Burger & Lynn, 2005). The purposes of the present thesis were to establish cultural differences among student athletes from both a developed and a less developed country and also to detect specific superstitions that are shared across cultures. Previous publications on the subject focus on athletes from Western countries only; hence, a study of this nature may be useful in exploring the phenomenon from different social contexts. Bearing in mind the interests of sport scientists as well as some practical considerations, this study not only dealt with measuring superstitious beliefs and behaviour and their relationship with personality variables, but went a step further to establish how superstitions are developed.

Also, the study extends existing literature by exploring how superstitious beliefs and behaviour are maintained.

The current thesis will provide insight into the functional benefits of superstitious behaviour to its users. It addresses the question of whether superstition plays a functional or malfunctional role in affecting athletes' performance. Previous research on superstitious thinking and behaviour has examined various factors that contribute to this phenomenon. Much of the work focused on the following questions: What kinds of superstitious behaviour exist among professional footballers? Who are the people that are especially prone to superstitions? Which circumstances are especially likely to elicit superstitious thinking and acting? Do superstitious behaviours and beliefs indeed yield an advantage for those who hold them? Where and how do sports superstitions originate, and under what conditions do they persist?

An overview of the rationale for the thesis appears here; a detailed overview of the rationale and the purpose for this thesis is provided on pages 65-67. Use of the same term (i.e., superstition) to explain a host of beliefs that encompass belief in ghosts, astrology, biblical miracles, illusory correlations, palmistry, lucky charms or rituals and a fear of black cats, can lead to conceptual confusion over exactly what superstitions are, how they are formed and maintained, and their relationships with other psychological constructs. It is hoped that this thesis will provide insight into what constitutes a superstition to professional athletes. It becomes increasingly essential to establish why elite athletes choose to rely on superstition to explain career and life experiences despite technological advancement in today's world. Yet superstitious beliefs and practices are under researched among elite athletes. This may be due to the pejorative sense in which the phenomenon is

usually employed in our day to day life. Media reports indicate that sports are plagued with such practices, and athletes and teams openly take part in them. This makes superstition in sports an interesting research area to investigate. Superstition may still be a major feature of athletes' thoughts and actions, and it is clearly important to address the question of why earlier predictions of its demise have proved false; but it is also important to establish its psychological consequences. Based on these rationales, the following aims and objectives were advanced for the present thesis.

## **The Overall Aims of the Thesis**

Despite the ubiquity of this phenomenon, little is known yet about the psychological functions and malfunctions of superstition in performance-related situations for the individual athlete and his or her team. To remedy this shortcoming, the present thesis attempts to specify the actual consequences of superstitions on performance outcomes, as well as the mechanisms underlying these psychological attributes in team situations.

Parapsychologists, sociologists, anthropologists and sceptics have an interest in investigating the nature of superstitions, albeit with somewhat different objectives in mind. The present study delves into measurement, correlates, psychological functions and malfunctions of superstition in sports. The participants of the present study were student athletes and professional athletes. These two groups are notorious for their engagement in superstitious beliefs and behaviours that seem to arise in important performance settings (Damisch et al. 2010; Vyse, 1997).

The thesis is organised in such a way that Chapter 2 provides a thorough literature review, Chapter 3 explores the prevalence of several superstitious beliefs and behaviours among Ghanaian and British student athletes, Chapter 4 focuses on superstition and psychological constructs, and Chapter 5 introduces an established theory of anxiety: the Theory of Challenge and Threat States in Athletes (Jones et al., 2009), which will be used in understanding superstition. Chapter 6 explores how superstition and religious behaviour and beliefs are developed and maintained among elite footballers, Chapter 7 investigates the possible psychological benefits and negative consequences evident in team sports, Chapter 8 provides empirical evidence for a causal link between superstitions and

performance on a sporting task, and Chapter 9 demonstrates how this thesis clearly contributes to knowledge and extant literature and offers practical implications.

The present research was designed to provide empirical support for the existence of superstitions, how they are developed and the psychological consequences on their practitioners. First, Study 1 was conducted to explore the prevalence of several superstitious beliefs and behaviours among Ghanaian and British student athletes. Precisely, the aim was to get a sense as to how widespread superstitions are among student athletes from both a developed and a less developed country, and also to detect specific superstitions that are shared across cultures.

Study 2 (Chapter 4) aimed to find empirical evidence of relationships among the variables of ethnicity and superstitious behaviours and negative/positive beliefs. The second purpose of this research was to draw upon an established theory of control (Rothbaum, Weisz & Snyder's control strategies theory (1982) to investigate the relationships between personal control, learned helplessness, control strategies, and superstitious beliefs and behaviour. Specifically, the study attempted to verify the claim that superstitious behaviour and beliefs act as a buffer when primary control, problem focus coping and technical skills fail a person. Study 2 focused on superstition and psychological constructs (coping, learned helplessness, personal control and control strategies). This study sets out to fill the gap in empirical evidence by exploring the possible relationships among personal control, primary and secondary control, helplessness and coping with superstitious behaviours. It was also designed to establish which of these psychological constructs predict superstitious beliefs and behaviour.

A mini review of literature is offered, which seek to create the platform to introduce an established theory of anxiety, the Theory of Challenge and Threat States in Athletes (Jones et al., 2009), to explain the phenomena under study. This was necessary because of the findings from the previous study that suggested a significant relationship among secondary control strategies (Positive reappraisals and Lowering aspirations) and negative and positive superstitious beliefs. The findings also indicated a significant association between God-Mediated control, religion and superstitious beliefs (positive and negative) and behaviour. The results again suggest that superstitious behaviour is moderated by personal control and coping variables.

In this study, secondary control, personal control and coping mechanism variables significantly contributed to negative superstitious beliefs. These inform the design of the subsequent studies to include both religion and superstitious behaviour experiences of professional athletes. Given that professional sport is characterised by the demand to perform at optimum levels in intense pressure situations, it was not surprising that a fair proportion of athletes engaged in either religious or superstitious behaviour to cope with the stress and anxiety which often accompanies their preparation and performance. This is consistent with what many authors have suggested – that paranormal and superstitious beliefs may be developed in anxious individuals with a strong need for control, in an attempt to overcome perceived uncertainty in their surroundings (Irwin, 2000; Jahoda, 1969; Malinowski, 1948). Hence, Chapter 6 was devised to discuss the psychological functions of superstitious behaviour and religion, and uses a reputable theory of anxiety to explain these superstitious rituals.

The purpose of Study 3 is to explore in detail how superstition and religious behaviour and beliefs are developed and maintained among elite footballers, how and when superstition can be useful in an elite athlete's career life experiences, and how superstition and religion can be integrated into secondary control strategies. This study draws on portions of the Theory of Challenge and Threat States in Athletes (Jones et al., 2009) to explain how superstitious and religious experiences affect/impact elite footballers' careers and to examine when and how superstition and religion becomes evident in their career life.

Study 4 was designed to explore the potential benefits and negative consequences evident in team sports. The study was a follow-up to a previous study that hints at the potential threat of superstitious behaviour to individual athletes within the team. In contrast to previous studies that claimed athletes practise superstitions to keep things constant and minimise disruption (Becker, 1975) and a source of light-hearted joking behaviour that contributes to team solidarity (Wrigley, 1970). Instead, the study examined the role of superstitious behaviour within the team, and consequences of team rituals on the individual members of the team. Based on the results of Study 3, the subsequent study focused on elite athletes' conformity to superstitious behaviour and beliefs that contradict their personal beliefs. The study also explored the role of superstitions in team sports and issues of half-beliefs and cognitive dissonance among elite team sport athletes in relation to superstition usage. During the study, athletes were given the opportunity to share their experiences with team rituals throughout their career.

Study 5 was designed to replicate the findings of the former studies and to shed light on the presumed underlying process. It sought to find empirical evidence for a causal link between superstitions and performance on a sporting task. Here, the study examined whether



activating a personal superstition improves subsequent performance, and whether conforming to team rituals can lead to performance impairment. Specifically, the widely believed superstitious concepts of good luck were linked to the equipment participants used while engaging in the performance task. That is, participants had to perform a penalty-taking task activating no superstition, a personal superstition and a conformed superstition.

As an index of performance, the number of successful penalty shots assessed was indeed higher after the implementation of personal superstition in comparison to conformed superstition and no superstition (control group). Therefore, the design of this study included several judgments of participants' perceived task-specific self-efficacy, perceived control, belief in luck, goal orientations and heart rate, which were assessed both at the baseline and after the superstition manipulation and the performance measure.

In summary, the current study seeks to examine the hypotheses derived from a contemporary version of Malinowski's theory that incorporates recent insights from sport psychology. The primary aim of this study was to empirically investigate the relationship between superstition and psychological constructs (personal control, learned helplessness, coping mechanism and control strategies) that produce superstitious thinking and behaviour. Thus, this study sought to establish a link between control, helplessness, coping and superstition, as it is implicated as both a consequence of a helpless situation and as an individual difference variable. Across Studies 1 through 5, multiple methods were used to understand superstition in an attempt to extend the degree to which the results can be generalised across cultures. Furthermore, knowing that superstitions are most likely to occur among elite athletes and student athletes, the present studies were designed to ensure the applicability of their results to both student athletes and professional athletes.

## **CHAPTER 2: LITERATURE REVIEW**

The present literature review will deal with the empirical findings relating to the prevalence of superstition, transformation of occurrence over time, establishing difference between superstition and pre-performance routine, distinguishing between superstition and religion, definition of terms, determinants of superstition, superstitious groups and individual differences in superstitious belief. This section is arranged according to the various classes of antecedent conditions which have been found relevant to the subject.

### **The prevalence of superstitions**

Notwithstanding the persistent media reports about superstition in the general population, there is scant research in the area. One reason might be that superstitious beliefs and practices are perceived as an extremely discouraging research topic (Scheibe & Sarbin, 1965). Others even perceive superstitious and magical thinking as “a label for a residual category – a garbage bin filled with various odds and ends that we do not otherwise know what to do with” (Nemeroff & Rozin, 2000, p.1). Another reason why to date there is only a limited amount of empirical research on superstitions could be that these behaviours are often associated with embarrassment (Van Raalte, Brewer, Nemeroff, & Linder, 1991; Vyse, 1997) and are difficult to observe directly. Undoubtedly, many people are reluctant to confess their superstitions, which are typically exercised in private, for fear of ridicule (Vyse, 1997). Nevertheless, there is some existing data that suggests the dimensions of superstition are common among various societies (for reviews see Jahoda, 1969; Vyse, 1997; Zusne & Jones, 1989).

In the nineteenth century, social theorists predicted that superstition “would gradually fade away in the face of that rationalism and empiricism which was presumed to be characteristic of modern capitalist society” (Campbell, 1996). These evolutionary theorists explain the phenomenon of superstition as something which is associated with non-literate African or Melanesian tribal societies. The superstition phenomenon is envisaged as a uniform trans-historical and trans-cultural phenomenon, something which is essentially the same in modern advanced countries (Britain, the U.S.A, Japan) as it is in non-literate African or Melanesian tribal societies, or indeed in Medieval Europe (Campbell, 1996).

Superstitious beliefs and practices are culturally relativistic; they are changeable under the auspices of scientific knowledge (Vyse, 1997). People don't become less superstitious with the passage of time, but rather the nature of their beliefs changes with the times. Instead of gradually fading, as some theorists expected (Campbell, 1996), superstitious thinking actually seems to have increased over the last two decades. Vyse (1997) reports that at least 9% of Americans suffer from a fear of Friday the thirteenth, and on such a date many of them will avoid flying, starting a new job, getting married or closing on a house (Harris, 2006; Brockenbrough, 2006). Mitchell (1995) reports that approximately 175,000 part-time and 10,000 full time astrologers operate in the U.S.A, horoscopes are featured in almost 70% of American daily newspapers, and 66% of the population reads them at least once a week. Indeed, a more recent Gallup poll (Newport & Strausberg, 2001) reported that now more than half (53%) of the American population admits to being at least somewhat superstitious. In a poll in Great Britain (Wiseman, 2003), more than three quarters (77%) of the respondents reported being somewhat superstitious. Similar degrees of superstitions

have been observed in the German population, with 51% of the interviewees holding superstitious beliefs (Lachmann, 2005).

These figures just suggest that superstition is common, despite technological advancement in our society. It can also be added that being superstitious is often associated with ignorance and naivety, and many people may therefore be reluctant to openly reveal such beliefs; as a result, survey outcomes are likely to underestimate their prevalence (Jueneman, 2001). Despite the believed prevalence of superstitious behaviour in sports, literature on this subject is very scant, and in most cases available details are inadequate. In any event, the nature of superstitions should be of interest in its own right to sport science researchers, since an athlete's belief systems can influence their performance and rehabilitation process.

In the same vein, sport, because of its very nature, is one of the places in society where superstitious behaviour thrives. The inherent lack of predictability in the outcome of sport creates one of its enduring appeals. Although sport science practitioners and athletes attempt to alter all factors into causal variables, the element of luck will always remain. The complexity of sport guarantees that all variables can never be brought completely under control, and it is this element of chance that creates the bedrock for superstition to emerge among athletes and fans. Before considering the results of empirical research on superstition, it is necessary to distinguish between superstition and pre-performance routines, and between superstition and religion.

## **Distinguishing between superstition and pre-performance routine**

Pre-performance routines (PR) are learned, behavioural and cognitive strategies intentionally used by athletes to facilitate physical performance (Cohn, 1990). Generally speaking, a major difference between superstitions and PR are that athletes control the PR, while athletes often feel controlled by superstitions. Superstitious behaviours differ from a pre-performance normal routine in that the person gives the action a special, magical significance. However, the distinction between superstition and preparing for a game is not always clear. For example an athlete engaging in meditation before a game may be described as superstitious, whereas to the athlete such behaviour forms part of his pre-performance routine.

The repetitive nature of such pre-game routines allows for the term 'ritual' to be used to describe these superstitious behaviours. Rituals may be referred to as ceremonies and routines conducted in the hope of achieving, or preventing a competitor from achieving, a winning performance (Reid, 1978). A ritual in sport can be described as a conscious activity involving heightened arousal with focused attention that provides a way of coping with a high-stress situation (Womack, 1992). Superstitious behaviours and rituals are different from pre-performance routines (PR) by their means of acquisition, and the measurable impact they have on performance. Furthermore, superstition often offers no logical progression to facilitate skill performance. PR usually has a specific benefit, or provides a warm-up (psychological and/or physical) routine, for the performance of a skill. Superstitious rituals are encouraged by the social influence of people around us. They normally grow, develop and are maintained through accidental reinforcement or social

influence combined with accidental reinforcement. For example, athletes may learn their superstitions from teammates and family members.

Pre-performance routines are developed for an individual or team by an expert such as a sports psychologist, after individual or team functioning has been assessed and developed by the athletes themselves. Thus, where rituals are created, sometimes spontaneously and seemingly at random, by the athlete, pre-performance routines are taught by an expert source. Second, pre-performance routines normally focus on cognitive self-control as a means by which an athlete can personally, directly and literally affect individual performance. In contrast, superstitious rituals include a wide range of behaviours, which athletes may feel controlled by. Pre-performance routines may correlate with actual performance only in the sense that they lower the anxiety levels of athletes and are perceived to affect some measures of control. In contrast, the power afforded superstitious rituals may be given only insofar as the athletes believe these rituals to be effective.

As noted by Vyse (1997), "It is often difficult to draw the line between superstition and useful preparation" (p. 90). For some superstitious rituals, it is easy to see that they have no function in useful preparation, but most superstitions are difficult to distinguish from preparing for performance; for example, an athlete who engages in meditation which has a religious underpinning but serves as useful preparation. A function of rituals might be preparing mentally for each performance. In this sense, rituals seem to serve a rational and useful purpose (cf. Neil, 1980).

## **Distinguishing between superstition and religion**

Religion may be defined as a “formal set of beliefs used to explain the unknown to man, used to comfort him in time of stress, used to keep his ethics in focus, held together by a mythology” (Coffin, 1971, p.40). Superstition is a belief that is outside the framework of one’s formal religion. For example, superstition has no formal set of rules or script in a Holy Book, like the Bible or the Koran, which governs its believers. Athletes’ religious rituals are likely to be referred to as superstitions by onlookers. So it is possible that an athlete may hide behind their religion when they are engaging in superstitious behaviour.

Although a flawless and unprejudiced distinction is not easy to come by, within a specific context, it may be argued that religion is an institutional connotation. Religion by definition includes practicing rituals, adhering to dogma and attending services. Superstition, unlike religion, starts from the individual, serves the individual’s interest foremost, and does not unite its believers. Religion has unique social functions with rituals or practices that seek to unite its believers. In contrast, superstition serves the individual’s purposes, and has no direct link with God. These social functions of religion revolve around institutional belief systems, while superstition embraces an individual system. A belief in a divine force and religious beliefs are often considered to fall outside the realm of superstition (Rudski, 2004). Further, religious belief and behaviour more or less reflect the cultural norms of the group, whereas superstitious belief and behaviour generally do not. Superstition is sympathetic. It makes use of the principles of homeopathy and contagion in a way that religious rituals do not, in that there is no religion that encourages the use of spells to cause harm. Superstition is a form of direct action. The superstitious acts and routines are aimed

directly at a specific end, whereas religious rituals such as prayers, for example, involve the persuasion of an intermediate figure.

Studying superstition as a psychological phenomenon within a specific cultural context can be related to religion, as beliefs and associated behaviour explicitly or implicitly assume the existence of supernatural powers. Religion is normally learned through formal education which forms part of the cultural norms of the group to which the individual belongs, while superstition refers to similar beliefs and behaviour which are learned through non-formal education and which do not form part of the cultural norms of the group to which the individual belongs (Plug, 1976). This distinction is similar to Abercrombie et al.'s (1970), which suggests that superstitious beliefs, unlike religious beliefs, do not form part of the creed of any conventional and acknowledged religion. The word 'creed' suggests that orthodoxy is religion and heterodoxy is superstition. Such an implication can be accepted here because it suggests that the major religious cultures each have clearly formulated belief systems, where non-adherence may be clearly defined. In addition, for some people, items of creedal statements may themselves be viewed as superstitions.

However, the basic similarities among these constructs are ritual involvement and cultural relativity. Religion and superstition are particularly important in offering purpose and meaning to athletes' activities and life (Vyse, 1997). By fostering personal qualities such as perseverance, courage and optimism, and encouraging an awareness of the spiritual, sport science consultants can help athletes become more able to cope with the adversities and pressures of high-level sport (Czech et al., 2004). Similarly, the use of superstitious and religious observances in sport, especially prayer, for dealing with performance anxieties



and personal difficulties has been shown to be an important area because these beliefs can have a powerful effect on an athlete's appraisal of stressful situations. A study by Vernacchia et al. (2000) identified the importance of spiritual and religious factors in athletes' lives. They interviewed fifteen Olympic track and field athletes (nine male, six female) and analysed the data with thematic content analysis. Six of their participants identified how spirituality, religion and prayer had been important elements of their athletic careers because they had been used as coping mechanisms. Results showed that athletes relied on spirituality, religion and prayer to cope with failure, struggle and adversity when suffering from injury or personal problems that impacted upon their athletic lives. It was also found that athletes' superstitious, spiritual and religious beliefs provided a deeper meaning to success and failure in their careers, and helped them remain faithful to training regimes.

In conclusion, both superstition and religion may be faulty attempts at understanding and controlling sporting events. Religion is normally made up of "beliefs", statements about the nature of sacred things, and "rites", or rules of conduct with respect to holy things. On the other hand, superstition is made up of individually held beliefs and rituals which are not based on institutionalised belief systems of a given society at a particular period. Religious beliefs and rituals are common to a specific group united by their faith. Although a superstition may be prevalent within a team or group, it does not unite its believers. For instance, there is no church of superstition, whereas religion cannot exist without a church. Hence, it may not be possible for any religion to prevail without a community of worshipers. It is the writer's contention that whereas religion may serve a group, superstition serves the individual. In summary, superstitious and religious observations are

utilised a great deal in sport. Superstitious and religious athletes often utilise their belief system as a performance enhancement technique. More specifically, prayer has been used as a coping mechanism for stress, to help with team cohesion and to promote a morally sound life (Czech et al., 2004). Although prayers are purely religious and thus not properly labelled as superstitious, both religion and superstition conflict directly with accepted scientific knowledge.

### **Superstitious half-beliefs**

The idea of half-belief was proposed by Peter McKellar in 1952 to refer to a given of norm-governing belief. He noted that superstitions “may involve either belief or half-belief (1952:320), the latter term referring to the fact that many who intellectually reject a superstition nevertheless allow it to influence their thinking and actions”.

Moreover, in many other studies people admit to engaging in manifold superstitious behaviours, but at the same time rate them as not necessarily very effective (Bleak & Frederick, 1998; Rudski & Edwards, 2007). Clark’s (1982) study of the intermingling of official and folk religion in a Yorkshire fishing village revealed a marked disjunction between belief and practice, with his informants (who were either fishermen or miners) confidently declaring that ‘fishermen’ or ‘miners’ believed in this or that superstition whilst taking pains to make clear that they never observed these practices themselves. Clark himself reports, however, how he witnessed incidents which revealed that his informants were just as likely to observe such practices as other members of the community. Some athletes carry rabbit foot as a good luck charm to bring good fortune before and during a game. For example, the 2008 French Open champion Ana Ivanovic bounces the ball only

once and avoids stepping on the white lines between points. These practices, she claims, bring her luck. Here she differs from other athletes who refuse to admit to their superstitions because of their distinctly negative flavour, and because they are often thought of as primitive and ignorant. As a result, some athletes will be superstitious and yet fail to admit it.

To suggest that half-belief is merely a name for a contradiction between a statement of belief (or, as in this case, disbelief) and conduct, and Garwood (1963) suggests that the term is used to refer to people who deny being superstitious yet admit to carrying out superstitious rituals. This reluctance to identify themselves as believers or practitioners of superstitious rituals is because of a fear that they might appear irrational, because superstitions carry a derogatory blemish and may even be slightly bizarre to an outsider. Again, people think they should perform the superstitious behaviour – just in case it might help (Jahoda, 2007; Killeen, 1977). They don't want to take chances, and believe these rituals may provide alternatives to negative situations.

### **Superstition as a function of culture**

The importance of socio-cultural factors in the explanation of superstition and its acquisition has been affirmed by several studies. Brooks (1964), for example, reported that magical disease beliefs are related to cultural orientation in Mexican Americans. Cultural influences may contribute to a large extent, as Kouabenan (1998) also pointed out on the basis of results from the Ivory Coast (West Africa), to professional drivers expressing an especially high degree of superstitious beliefs. Superstitions in connection with pregnancy in South Africa depended on cultural affiliation, as was reported by Schoeman (1969). The

fact that qualitative and individual differences and sources of superstitious beliefs and behaviours are related to culture is further evidenced by, and in fact partly forms the basis of, both sociological and psychological investigations (Plug, 1976). This provides ample justification to compare the use of superstition across two distinctively different cultures. In particular, the United Kingdom and Ghana can be used as prototypic examples of an individualistic and a collectivist culture (Heine, 2001). That is, whereas the British typically emphasise personal achievements and uniqueness, Ghanaians are more concerned with cooperation, belonging to a larger group and fitting in.

Coffin (1971, p.41) suggests that an athlete knows three types of sport superstitions: (1) those beliefs and practices they bring with them from their main culture, (2) the long-standing superstitions of their sport, and (3) their personal superstitions or eccentricities. Hence, it is not always easy to make distinctions about various superstitions; it is evidenced that two of these three basic sources of sport superstitions are rooted in the athlete's personal traditions and sporting culture. It is therefore not astounding that the use of superstitious behaviours in sport is a widely accepted practice in athletes from all sports and cultures (Womack, 1992). Once superstition is generally accepted among all cultures and sports, irrespective of the negative interpretations that others may have of it, it becomes necessary to investigate the cultural dynamics of the phenomenon under study.

Malinowski (1927) suggested that superstitious rituals occur primarily when people encounter conditions of uncertainty. Hence, they are present and occur throughout all cultures. In the release of fear or anxiety, superstitions thus fulfil a general cathartic function for those who perform them. Since these beliefs are transmitted via social interactions, they are reflected in human experiences within athletic organisations. It would

appear that one learns the superstitions of the sport in which one is most directly involved, either as a participant or spectator. The media transmits these beliefs in sport, and the spectators watching the contest associate the players' actions with these reports (Bagnato, 1997). This is probably due to the fact that the players are often directly or indirectly involved in the web of social relationships responsible for the transmission of such beliefs. The societal influence also holds true for the athletes, but to a lesser extent, as it appears probable that they learn their superstitions in association with the specific sport in which they are engaged. One example is tennis players bouncing the ball a certain number of times. This may be purely due to the individual athlete's beliefs in certain numbers and the tennis superstition associated with bouncing of the tennis ball. Superstitions' existence within the sphere of athletics requires investigation. The inherent competitiveness of athletes and societal pressure to succeed in sports can influence an athlete to resort to external means, such as superstitious behaviour, to control the outcome of an athletic contest. For this reason, one would expect to find superstition involved to some extent in all sport. Hence, there is a need to study the phenomenon to understand why athletes engage in such behaviours and the consequences on their performance.

### **How superstition is acquired**

Womack (1981) discussed the complex and thorny issues inherent in the concept of superstition, and in an attempt to obviate them, she suggested that superstition can be developed through causal and coincidental associations. Causal superstition refers to the

conception of superstition through believing in a causal link between behaviour and influencing events despite the lack of any supporting scientific evidence (Ciborowski, 1997). A causal superstition was suggested to be part of a conscious belief (Jahoda, 1969). Causal attributional explanation holds that people are generally inclined to attribute success to their skills and abilities, and to attribute failure to external circumstances (Feather, 1969). This could possibly explain why athletes and other superstitious believers are inclined to mistakenly attribute positive outcomes to their skills and abilities, which in reality occur as a result of luck. This confusion between chance and ability may expound why people think they can influence luck by carrying out superstitious rituals, hence such beliefs and behaviours cannot be termed irrational. The paradox in performing a ritual or carrying a lucky object as a way of controlling external factors is that it may actually provide physical or mental relief to the point that it directly affects performance.

Observing association between external actions and one's own thoughts, desires and intentions may thus sometimes lead to the incorrect inference that one has somehow caused the actions to occur. This error in causal inference may underlie "illusions of control" (Langer, 1975; Matute, 1996; Thompson, Armstrong, & Thomas, 1998), in which people overestimate their causal impact on chance events by conceptualising them as attributable to their own influence.

On the other hand, Jahoda (1969) reported that coincidental superstition was more ambiguous about what behaviours individuals believed caused a particular outcome. This explanation may allude to the inclination to control a situation or event in which the outcome is solely determined by chance. There is the potential for athletes and others who are involved in chance-oriented activities to see a causal link between their actions and

outcomes, when in reality there is none. For example, Skinner suggested that these behaviours were a result of chance actions being paired unintentionally with reinforcement, which seems to give an illusion of control over outcomes.

It is this search for control in situations or conditions of uncertainty that breeds superstition. Superstitions are observed in circumstances involving stressful and uncertain events. For example, college athletes show superstitious behaviours in sports competitions (Bleak & Frederick, 1998; Ciborowski, 1997), and inhabitants of war zones report magical beliefs about their personal safety (Keinan, 1994). Support for this explanation comes from studies showing that people display signs of superstitious thinking when they are faced with a combination of uncertainty about an outcome and a desire for control over that outcome (e.g., Bleak & Frederick, 1998; Keinan, 1994, 2002; Matute, 1994). For example, magical thinking has been documented among people such as inhabitants of Germany in the interwar period living in an environment of high unemployment and political instability (Padgett & Jorgensen, 1982), and police officers with jobs that put them in dangerous situations (Corrigan, Pattison, & Lester, 1980). The above discussion suggests that the negative effects of uncertainty on action prompt some people to resort to superstitious practices. However, there are few people who practice superstitious behaviour in times of certainty because it is now part of their daily routine.

One condition that appears to be common for all superstitious behaviour is a situation of uncertainty, termed the “uncertainty hypothesis” (Burger & Lynn, 2005). The uncertainty hypothesis posits that magical rituals increase performers’ sense of control, which reduces anxiety and allows individuals to cope with their unpredictable conditions and successfully perform the high-risk tasks they face.

Even when people recognise that control over life events may be impossible to achieve, magical beliefs may arise out of a motivation to find “meaning” in that which they cannot control (Pepitone & Saffiotti, 1997). Indeed, there is evidence suggesting that uncertainty regarding future outcome is an important determinant of superstition (Torgler, 2007). For example, it has often been assumed that the illusion of control tends to be more pronounced in situations in which not only skill but also chance play a substantial role (Lanser, 1975, 1977; Langer & Roth, 1975). It has been argued that people may react to uncertain and unpredictable situations with superstitious beliefs or actions (e.g., Malinowski, 1955; Vyse, 1997), thereby suggesting that superstitious rituals are more likely or more pronounced as situations are characterised by uncertain outcome.

Once again, it’s this illusion of control that creates an avenue for superstitions to develop through operant conditioning. Williams’ repeated bringing of her shower sandals to the court, tying her shoelaces a specific way and bouncing the ball five times before her first serve and twice before her second serve is similar to operant conditioning. According to this view, the reinforcement she derives from these routines must have perpetuated her superstitious behaviour. The specific type of reinforcement can determine whether outcomes affect the degree of superstitious behaviour.



## **The superstitious personality**

### ***Demographics of superstition***

This section will deal with the empirical findings relating to individual differences in superstitious beliefs and behaviours. Numerous correlations between superstitions and demographic factors or personality traits have been identified (Goode, 2002; Mowen & Carlson, 2003; Farha & Steward, 2006). Whereas some of these findings are very consistent, others vacillate across studies.

### ***Superstition and gender***

Early studies indicated that women held more general superstitions than men, although sport superstitions among women were practically unknown (Conklin, 1919). Females are often described as more gullible than men (Preece & Baxter, 2000). But according to Johnson and Pigliucci (2004), the difference seems related to what kind of pseudoscientific or superstition phenomena are being discussed. In the study by Johnson and Pigliucci (2004) there were significant differences in pseudoscientific beliefs in only two questions of ten. Preece and Baxter (2000) found females less sceptical than men, with only one exception: beliefs that aliens from another planet had visited Earth. The use of superstitious ritual in sport has also indicated that female athletes are more likely to engage in superstitious behaviour than male athletes. For instance, Burke, Czech, Knight, Scott, Joyner, Benton, and Roughton (2006) found that some differences were exhibited in individual superstitious behaviours and belief in their effectiveness. Female athletes were significantly higher in their frequency of team rituals and their belief in the rituals' effectiveness.

However, Gregory and Petrie (1972) reported that male athletes and non-athletes listed a greater number of superstitions associated with sport than did their female counterparts. Neil et al. (1981) also found more ice hockey related superstitions among male players than among female players at both the intercollegiate and intramural playing levels, but attributed this more to the length and level of involvement in the sport than to real sex differences. Goode (2000) reported that whereas women typically have greater levels of religious, parareligious, and superstitious beliefs than men, men are more likely to believe in extra-terrestrials. These inconsistent findings can be attributed to the shortcomings in developing the scale of measurements, what constituted a superstition and the interpretation of the data analysis, so no firm conclusions can be drawn from some of these findings.

### ***Superstition and age***

Also inconsistent are the findings on the relationship between age and superstitions. Children are, if anything, even more superstitious than adults, as Opie and Opie have shown (1959), whilst the outburst of belief in the occult and the esoteric which marked the counter culture of the 1960s demonstrated that even the educated young were not immune to 'superstitious' belief and practice (Martin, 1981). Epstein (1993) suggests an increase of superstitious beliefs with increasing age, whereas Thouless and Brown (1964) reported that superstitious behaviour shows a definite decline with age, but unfortunately the data were not fully presented. This makes it difficult to draw definite conclusions from their findings. Thouless and Brown's findings were confirmed by Torgler (2007), who concluded that a higher age is correlated with a lower degree of superstition. The inconsistency can be attributed to different researchers investigating superstition with varying measures, such as the Superstitious Ritual Questionnaire, the Superstitious Belief Questionnaire, etc., and

defining young and old age differently; for example, categorising young people as those below 18 years of age and old people as those above 18 years of age.

### ***Superstition and level of education***

One may argue that the acceptance of pseudoscience and superstition is restricted to the least educated portion of the population. In the words of Miller (1987), the influence that these beliefs exercise may be explained in light of the fact that “for the 25 million Americans who do not have a high school diploma, the world is a strange, hostile and somewhat dangerous place”. Contrary to this view, though, several studies have failed to find any negative relationship between education and superstitious thinking, thus suggesting that superstitious beliefs may be just as common among college-educated individuals as well non-students (Goode, 2002; Farah & Steward, 2006).

### ***Superstition and personality traits***

In contrast to the results concerning the prevalence of superstitions depending on demographic factors, findings on the relationships between certain personality characteristics and superstitions seem to be much clearer. Thus, for example, numerous studies have reported more superstitions and irrational beliefs among people with lowered capacity for critical thinking, less-skilled logical reasoning and lower IQs (Alcock & Otis, 1980; Wierzbicki, 1985). Higher levels of superstition correlate with higher levels of conservatism (Boshier, 1973a), higher levels of trait anxiety (Epstein, 1991; Wolfradt, 1997) and lower levels of self-efficacy (Tobacyk & Shrader, 1991).

Considering the evidence presented in this section, it seems that there might be some tendency to believe more readily in superstitions which is predominantly associated with rather poor psychological adjustment. However, even though these findings seem to be rather consistent, the amount of confidence in these findings is apt to remain low until they have been confirmed through the use of adequate psychological tests that have been validated. Also, these results may well depend on the type of superstition considered and the technique of measurement employed.

In most of these studies, superstitious beliefs were assessed using the superstition subscale of the Paranormal Belief Scale (Tobacyk, 2004; Tobacyk & Milford, 1983). This instrument, however, only consists of items assessing so-called “negative” superstition, which refer to “bad luck” (e.g. breaking a mirror, the number 13, black cats), and neglects “positive” superstitions which refer to lucky events (e.g. carrying a charm, crossing fingers, touching wood). Also, Wiseman and Watt (2004) conducted an empirical study demonstrating that these positive superstitions are important issues that deserve utmost attention.

Overall, superstitions related to “good luck” were endorsed more often and revealed a more favourable pattern on several individual difference measures (e.g. life satisfaction, neuroticism) than did superstitions related to “bad luck”. This finding suggests that the maladaptive nature of superstitions, which has often been suggested (Alcock, 1981; Dag, 1999), might not be the whole truth. Rather, some researchers have begun to re-evaluate the functions of superstitious beliefs and behaviour, and argue that superstitions may just as well be adaptive (Keinan, 2002; Rudski, 2001; Rudski & Edwards, 2007; Vyse, 1997; Wiseman, 2004; Ofori et al., 2012). This viewpoint appears especially plausible when

examining groups of people who are traditionally particularly attracted by superstitions (Vyse, 1997), such as athletes and students. These groups of people are easily swayed by reinforcement contingencies.

Several researches have revealed that individuals differ in the extent to which they perceive the environment as controllable (Van Raalte et al., 1991). One trait of particular interest is locus of control. People who believe that they largely control their own destiny are said to exhibit an internal locus of control, whereas people who believe that chance or outside forces determine their fate exhibit an external locus of control (Myers, 1995, p. 489).

The psychological dimensions of optimism and pessimism have been the topic of a substantial amount of research (Scheier & Carver, 2003). Optimistic individuals are categorised as having positive expectations and perceptions on life. Optimists also believe the future holds desirable outcomes. In contrast, pessimistic individuals tend to represent a negative bias towards life because the future is undesirable (Scheier & Carver, 2003).

Superstition has been linked to psychological dimensions of optimism and pessimism (Matthews & Owens, 2003; Burke et al., 2006), and physical well-being (Carver & Scheier, 2003). For example, Burke et al. (2006) found that optimism did not seem to be significantly associated with the overall usage or belief in the effectiveness of superstitious. Although these personality traits seemed to play a factor in particular superstitious beliefs subscribed to by the athletes, not much has been done in the area. The present study sought to correct this oversight by examining how personal control and other psychological constructs can predict athletes' superstitious behaviour.

Perhaps the greatest problem is that much of the literature has been based on the above mentioned psychological constructs, which does not allow the participants to state how athletes' personality traits predict their engagement in superstitious behaviour. It is worth considering superstition across gender, age and level of education because it represents under-explored questions of common phenomena in our society, such as what determines superstition and how it varies across these variables. In conclusion, personalities are shaped by broad, consistent traits that may or may not be biological in origin. These personality traits have helped researchers improve our understanding of superstition beliefs.

### ***Learned Helplessness***

Heightened perceptions of control have been associated with psychological and physical well-being (Alloy, Clements, & Koenig, 1993), whereas undermined perceptions of control have been associated with feelings of helplessness and other negative psychological and physical consequences (Abramson, Seligman, & Teasdale, 1978). Heckhausen and Schulz (1995) reported that secondary control may function as a buffer against negative affect or helplessness under conditions of low primary control. Based on this, controllability may be a critical factor in the development of learned helplessness. Dweck (1980, p.2) defined learned helplessness as “the perception of independence between one’s responses and occurrence of aversive outcomes....that is, the belief that what you do will not affect the course of negative events, that you have no control over negative events.”

By its very nature, the sporting climate evokes a stress response by placing many demands on competing athletes (Jones, 1995). How athletes appraise stressful situations provides insight into why some athletes engage in superstitious behaviour. One of the explanations

for an increase in the frequency of superstitious behaviour under conditions of stress is based on the concept of personal control. There is also evidence that helplessness undermines the individual's sense of control (Matute, 1994), often leading to maladaptive behaviour. Resorting to superstitious beliefs, according to this explanation, is one of the ways people may choose to re-establish or regain perception of control in a state of anxiety. As demonstrated above, these stressful situations often come with a sense of low control and perceived psychological stress (Treasure et al., 1996), which are exactly those variables that have been demonstrated to elicit superstitions in other domains of life (Keinan, 1994).

Further empirical evidence supporting an effect of superstition on enhanced efficacy or illusion of control can be drawn from the previously discussed work of Matute (1994) and Dudley (1999). However, while both authors conclude from their findings that the prevention of performance impairment in the presence of superstitious thoughts was based upon an illusion of control, only Matute actually presented empirical data supporting this reasoning. Specifically, she demonstrated that the tendency to develop superstitious behaviour during exposure to uncontrollable noise provided an illusion of control, as participants indicated no perception of uncontrollability. It has been established that learned helplessness and superstition are by-products of uncontrollability (Matute, 1995), but the exact relationship is yet to be investigated.

### *Superstitious groups*

So who are the people that seem to be especially likely to exhibit superstitions? Gamblers, sailors, financial investors and soldiers (Vyse, 1997). Groups particularly susceptible to superstitions are athletes (Todd & Brown, 2003; Womack, 1992), students (Vyse, 1997), politicians, sailors and the army. These people are said to practise superstitions that are either exclusive to or typical of their group because of the seemingly dangerous nature of their work and high degree of uncertainty that surrounds them.

### *Superstitious students*

Students are not as well known for their superstitious beliefs and behaviour as athletes. There is a perception that highly educated people should be more sceptical than less educated individuals. As superstition is associated with fear of failure (Vyse, 1997), and students normally experience fear when examinations are approaching, many students are genuinely fearful. Vyse (1997) observed that examinations can create anxiety among students due to the uncertainty and unpredictability of the exam questions. Assessing the level of superstition in student populations, Gmelch and Felson (1980) and Gallagher and Lewis (2001) reported that nearly 70% of the students who participated in their studies had engaged in superstitious rituals. Similar results were reported by Saenko (2004) for Russian students and Pasachoff et al. (1970) among male undergraduate students at Harvard University. An additional interesting finding was reported by Albas and Albas (1989), who demonstrated that the great majority of superstitions held by students were intended to bring “good luck” rather than ward off “bad luck”.



The specific behaviours ranged from wearing particular pieces of clothes, carrying a common talisman (rabbit's feet, coins), making the sign of the cross, and wearing particular jewellery or perfume to using special pens or eating certain kinds of food (Vyse, 1997). Within this cluster Albas reported a fascinating tale of one student who was reluctant to take an exam until he had found a "lucky" coin around the bus stop, even at the risk of being late.

### *Superstitious athletes*

The huge interest generated by sports makes athletes the most famous of all superstitious groups (Foster, Weigand and Baines, 2006). Uncertainty is an integral part of most sports. Although there are seemingly equal levels of uncertainty in both examinations and athletic competitions, student athletes and non-student athletes seem to engage in superstitious rituals even more extensively when it comes to athletic competitions (Rudski & Edwards, 2007). Because the motivation to win or perform well can be quite strong, it is therefore not startling that athletes resort to superstition in an attempt to alter their chances. Several studies on high school, college and university athletic teams reveal a similar high level of superstitions across different types of sport, such as baseball (Ciborowski, 1997), basketball (Buhrmann & Zaugg, 1981, 1983), hockey (Neil et al., 1981), gymnastics, track, American football (Bleak & Frederick, 1998), volleyball, swimming and tennis (Gregory & Petrie, 1975).

However, not just student athletes but also professional baseball players (Burger & Lynn, 2005; Gmelch, 1974) as well as football (Ofori et al., 2012), volleyball and hockey players (Schippers & Van Lange, 2006) frequently exercise superstitious practices, at slightly

higher rates than the general population. Some differences across diverse types of sport appear in the kinds of superstitions in which athletes engage (Bleak & Frederick, 1998). Gregory and Petrie (1975), for example, report different superstitions for team sport athletes than for individual sport athletes. Whereas the former exhibited more superstitions related to equipment, for example, the latter exhibited more superstitions related to wearing lucky charms.

In football, even the best professional players cannot score an average of one goal per game in the whole football season. On average, these players complete only 60 percent of their passes. Because the motivation to win or perform well is quite strong, it is not startling that athletes resort to superstition in an attempt to alter these percentages. It is fascinating that superstitions in sport are generally restricted to the least-certain activities, and may vary from one sport to another. Gmelch (1974) noted that the most capricious parts of the game of baseball are batting and pitching. Because winning depends on scoring more runs than the opposing team, a pitcher can perform very well and yet lose, or can give up several runs and win. Gmelch observed that the superstitions of professional baseball players parallel those Malinowski observed in Trobriand fisherman. Just as Trobrianders reserved their fishing magic for the uncertain open sea, baseball superstitions centre around hitting and pitching.

Most superstitions in sports may involve either personal rituals aimed at improving individual performance or team rituals directed towards group success. However, Gregory and Petrie (1975) discovered that although all players participate in team rituals equally and no one is left out, the situation is different among hockey players. Success in ice hockey is highly dependent on the performance of the goalie. The hockey goalie's sole

function is to minimise the opposing team's score by stopping or deflecting every shot the opposing team makes into a goal. Gregory and Petrie found that a greater number of hockey superstitions involved the goalie. For example, players often believe it is important to let goalie go out onto to the ice first, and many players touch the goalie's pads for good luck. This tradition in hockey contradicts what is seen in football, as Ofori et al. (2012) found no significant differences between goalkeepers and attackers in how they subscribed to superstitious practices. The reason why a position like goalkeeping in hockey is associated with ritualistic behaviours may be due its risky nature. Perhaps the risk component in football does not vary by position.

Finally, Ofori et al. (2012) discovered that elite footballers had a higher incidence of engaging in superstitious rituals associated with their clothing and appearance. This finding is contrary to the viewpoint of Ciborowski (1997), who found that collegiate baseball players had a higher incidence of possessing a lucky object or charm. The discrepancy found between these two studies may be attributed to the difference in competitive level of participants. Thus, the level of competitiveness can be an emerging factor that can differentiate particular groups of athletes in ascribing to a different sport ritual. We can draw the conclusion that it is not necessarily effectiveness of a superstitious sports behaviour which determines its popularity among athletes, but the traditions of the said sports.

## **Similarities among these groups**

What are the reasons for the high prevalence of superstitious thoughts and practices among these particular populations? First, each of these groups confronts a situation in which a particular outcome is both uncertain and highly valued and as such the potential to stimulate stress. Despite the fact that superstitions apparently are associated with rather poor personality characteristics, these people actually seem to be especially well adjusted and skilful in coping with required tasks (Lustberg, 2003). Superstition appears to be a psychological mechanism helping these individuals and professionals to cope with the stress of the occupational situations. There are tentative answers as to where and how these superstitions originate and under what conditions they persist. In order to be successful in their chosen professions, ability to cope with the unpredictable nature of such jobs seems to be necessary. From this standpoint it seems possible that the frequently observed superstitions in these specific populations are helpful rather than merely maladaptive. However, there are variations in superstitions from one occupation to another, and even with the roles assumed within a particular context.

More so, for students and athletes, contests unfold over a period of time before an examination or the game is over. During a period of examination, and also during a game, there can be large cycles of fortune and misfortune. Although these uncertainties are usually paltry, coincidental turns, they are often the impetus for superstitious beliefs and rituals.

Furthermore, students, athletes, politicians and stock traders are social groups that involve varying degrees of group activity. The various occupational groupings engage in activities

that produce socially shared superstitions (e.g., clothing and appearance ritual among brokers and team sport athletes). Superstitious behaviours are learned or can be passed on from one generation to another. These groups of professionals believe that their rituals are efficacious in controlling luck or external factors (Torgler, 2007).

However, the differing social structures of these groups parallel the kinds of superstitions they adopt. For example soldiers who are active in situations with high risk and uncertainty often use protecting charms and amulets (Stouffer, 1949, cited in Torgler, 2007). It is a common practice for athletes to use good luck charms as a ritual to inspire them during a contest, making them feel more powerful by controlling luck or other external factors.

Another resemblance shared by these groups is that they often face situations in a performance context. No matter whether it is an exam or a sporting event, the achieved performance is considered important. In fact, as well as perceived importance, the achieved outcomes are subject to external evaluations by experts such as teachers, professors, athletic judges, supervisors and supporters. Furthermore, in most cases, these professionals only have a limited number of opportunities to make critical decisions within a very limited time. For example, students usually are allowed a specific timeframe to answer questions. Similarly, within one competition an athlete has a time limit within which one has to produce an outstanding performance. The outcomes of these single events and decisions then have important consequences and may determine one's future. Depending on the achievement in the specific test or exam, a student may or may not be permitted to join an advanced class.

Similarly, athletes may or may not stay on the team or become qualified for a more prestigious competition depending on their achieved performance. In light of these characteristics and the resulting pressure, physiological tension and feelings of anxiety (Schippers & Van Lange, 1996) they produce, it may not be surprising that these groups seek help from external sources, such as superstitions. The next sections examine a theory of control and how that can explain how superstitious beliefs and behaviour are generated.

### **Primary and secondary control**

Malinowski (1948) was among the first scholars to propose that superstitious responses to stress are a means of coping with uncertain and uncontrollable conditions. Superstitious rituals increase performers' sense of control, which reduces anxiety and allows individuals to cope with their unpredictable conditions and successfully perform the high-risk tasks they face (Burger and Lynn, 2005). Psychologists have actively explored the emergence of superstitious rituals and beliefs among diverse populations facing uncontrollable conditions, including gamblers (Bersab'e and Mart'inez Arias, 2000); consumers in the marketplace (Block and Kramer, 2009; Kramer and Block, 2008); test-taking students (Rudski and Edwards, 2007); targets of warfare (Keinan, 1994, 2002); puzzle solvers (Dudley, 1999); golfers (Damisch et al., 2010; Wright and Erdal, 2008); footballers (Ofori et al., 2012); baseball players (Burger and Lynn, 2005); track and field athletes (Todd and Brown, 2003); and various other athletes (Bleak and Frederick, 1998; Schippers and Van Lange, 2006; Womack, 1992).

By its very nature, the sporting climate evokes a stress response by placing many demands on competing athletes (Jones, 1995). How athletes appraise stressful situations provides insight into why some athletes engage in superstitious behaviour. One of the explanations for an increase in the frequency of superstitious behaviour under conditions of stress is based on the concept of personal control. There is also evidence that helplessness undermines the individual's sense of control (Matute, 1994), often leading to maladaptive behaviour. Resorting to superstitious beliefs, according to this explanation, is one of the ways people may choose to re-establish or regain a perception of control in a state of anxiety. As demonstrated above, these stressful situations often come with a sense of low control and perceived psychological stress (Treasure et al., 1996), which are exactly those variables that have been demonstrated to elicit superstitions in other domains of life (Keinan, 1994).

So can superstitious behaviour be activated as a means of regaining control when experiencing psychological tension? To answer this question, the present study draws on the notion of primary control and secondary control (Rothbaum, Weisz, and Snyder, 1982). Rothbaum et al. contended when attempts are made to change outcomes instrumentally, the process of control is primary. Primary control striving refers to an individual's attempts to change the external world so that it fits with their personal needs and desires. Instances of primary control striving are evident in persistence in goal striving or the investment of time and effort if obstacles emerge. However, the process of control is secondary when attempts are made to gain a feeling of control when actual control is perceived as unlikely or unattainable. A person may obtain this feeling of control by accommodating existing realities (e.g., adjusting expectations, finding meaning in events, activating superstition).

Secondary control striving is normally targeted at the inner world and involves individuals' efforts to influence their own motivation, emotion and mental representations (Rothbaum et al., 1982). Exemplar processes of secondary control include positive reappraisal and downward comparison, or goal disengagement.

Specifically, under uncertain circumstances, individuals are likely to attempt primary control because they will prefer to draw on their personal skills and abilities. Then, if primary control is perceived as ineffective, they should resort to a compensatory secondary control strategy upon realisation that their physical efforts alone can bring the desired change. In this way, secondary control may function as a buffer against negative affect or helplessness under conditions of low primary control (Heckhausen & Schulz, 1995). Case et al.'s (2004) findings revealed that superstitious strategies served as a backup when primary control decreased.

This implies that superstition is common where the individual lacks the necessary technical knowhow to change a helpless situation. Case and his colleagues went on to suggest that under circumstances where failure was most salient, people turned to superstitious strategies in an attempt to obtain the comfort of secondary control. This confirms Keinan's (2003) assertion that superstitious beliefs offer explanations and reasons for phenomena that are otherwise inexplicable or unfamiliar. These kinds of situations often come with a sense of low control and perceived psychological stress (Treasure et al., 1996), which are exactly those variables that have been demonstrated to elicit superstitions in other domains of life. Previous researchers have reiterated that secondary control serves a compensatory function under conditions of low primary control (Heckhausen & Schulz, 1995; Thompson



et al., 1994), and Case et al. (2004) suggested that superstitious strategies represent secondary control.

Secondary control strategy is related to goal disengagement and rescaling goals. Goal disengagement is normally a product of negative life events and is particularly maladaptive if the athlete faces challenging conditions for goal attainment (Wrosch, Heckhausen and Lachman, 2000). Moreover, goal disengagement from career difficulties, such as injuries, de-selection, choking, fear of failure and contractual issues, would have detrimental effects on the athlete's overall control resources. These are issues that the athlete can barely exercise adequate control over, since they involve other factors that are not within their control; for example, the number of players available at a comparably cheaper fee than your asking price, changes in the team's technical direction and even club policy for extending contracts of players over a certain age limit.

These examples depict situations of psychological stress and tension, where an athlete has insufficient resources to meet the demands of such negative circumstances. In such instances, the individual may use superstitious beliefs or religious rituals to generate solutions that increase their sense of control over the sources of stress. However, goal disengagement could be adaptive if athletes could disengage from goals which seek to undermine their control in potentially stressful situations; some researchers have begun to re-evaluate the functions of superstitious beliefs and behaviour and argue that superstitions may just as well be adaptive (Keinan, 2002; Rudski, 2001; Rudski & Edwards, 2007; Vyse, 1997; Wiseman, 2004).

The next sections will examine specific situational circumstances under which superstitions seem to arise, and will focus on potential beneficial functions of superstitious thoughts and practices.

## **The “superstitious situation”**

### *Superstitious situations in decision-making*

No matter which school of thought one adheres to, two key links between superstition and decision-making emerge from the literature: uncertainty and rationality. There is a natural connection between these two concepts in decision-making: In the presence of uncertainty, rational behaviour requires an appreciation of the possible variations in the outcome of any chosen action, and such behaviour must, therefore, be based on systematic reading of uncertainties regarding the outcome and ways of dealing with them (Sen, 1990). Malinowski (1948) reported that deep-sea fishermen performed superstitious rituals to ensure a safe trip and success. On the other hand, fishermen who worked in calm waters employing highly standardised fishing methods did not have such customs. Superstitious rituals were used as a shield against uncertainty, as fishing in the deep open sea was dangerous and unpredictable. In one stream of work, Schindler and colleagues studied the effects of superstitious beliefs for insurance decision-making (Schindler, Conlin, & Kornberger, 2007; Schindler, Dolansky, & Adams, 2009). Jiang, Cho, and Adaval (2009) recently extended this work into financial investment decision-making. In a study on risk-taking, Jiang et al. demonstrated that consumers were likely to invest more money in an

online trading account than into a less risky Individual Retirement Account (IRA) when they were primed with lucky numbers than when they were primed with unlucky numbers. Kramer and Block (2008) showed that superstitious beliefs related to Friday the 13th had a greater impact on consumer choice in relatively more uncertain gambles. Tsang (2004) stated that uncertainty is a natural link between superstition and decision-making, because uncertainty and related concepts such as ambiguity and risk are central to the literature on decision-making (Kahneman et al., 1982). The inability to predict the exact outcome or impact of decisions makes decision-making fertile ground for breeding superstition.

### ***Superstitious situations in sports***

The inherent competitiveness of athletes and the social pressure to succeed in sport can influence an athlete to resort to external means, such as superstitious behaviour, to control the outcome of an athlete contest. Throughout history, people have used rituals based on religion, magic and/or superstition to cope with uncertainties in their lives. Because sport competitions involve a high degree of uncertainty, it is not surprising that many athletes use religious prayer and other superstitious rituals and actions to make them feel as if they have some control over what happens to them on the playing field. The feeling of control or stability can help calm an athlete before a contest, thus allaying excitement and anxiety, while also increasing perceived confidence (Becker, 1975).

Professional athletes in a scenario study indicated higher commitment to superstitious rituals the more important the game was perceived to be and the more uncertainty they experienced prior to the game (Schippers & Van Lange, 2006). Similarly, Ciborowski

(1997) reported a high rate of superstitious practices when games were close or when a team was about to lose, but not when a team was leading comfortably. Additionally, evidence has been gathered demonstrating that athletes for whom the importance of the game is high rather than low are most likely to engage in superstitious behaviour (Buhrmann & Zaugg, 1981; Neil et al., 1981). Thus, superstitions are more prevalent the higher the competitive level, the greater the personal involvement and the longer athletes had trained in their sports (Schippers & Van Lange, 2006). For example, professional footballers who played at the top level engaged in superstitious rituals to cope with the higher demands of the competition (Ofori et al., 2012). Furthermore, superior teams as well as better individual athletes within a team exhibited more superstitious behaviour than inferior teams or poorly performing individual athletes (Buhrmann & Zaugg, 1981). As demonstrated above, situations of uncertainty, anxiety and a strong desire to achieve often come with a sense of low control, high uncertainty and perceived psychological stress (Treasure et al., 1996).

### ***Superstition and experienced psychological stress***

One of the explanations for an increase in the frequency of magical thinking under stress is based on the concept of personal control (Keinan, 1994). There is extensive evidence that stress undermines the individual's sense of control (e.g., Fisher, 1986; Lazarus & Folkman, 1984), often leading to increased efforts to regain such a sense (e.g., Friedland, Keinan, & Regev, 1992). Keinan (2002) conducted an experiment with students of Tel Aviv University, where she approached students either half an hour prior to an exam (high stress condition) or on a regular study day (low stress condition). Participants were interviewed with several questions, some of which were especially designed to elicit the superstitious

behaviour of “knocking on wood”. For example, participants were asked whether they had ever been involved in a fatal road accident. The experimenter recorded whether the participants then knocked on wood. Keinan (2002) found that participants in the high stress condition knocked on wood more often than those in the low stress condition. Resorting to magical thinking, according to this explanation, is one of the ways people may choose to re-establish or regain perceptions of control.

In spite of the different line of research outside the world of sport presented above, some researchers in the area of sports indicate that psychological stress, low perceived control and conditions of uncertainty are main predictors of superstitions. Womack (1992) has suggested that athletes use superstitions as a means of maintaining emotional stability to perform optimally, and also as a means of dealing with stress, anxiety and danger. Bleak and Frederick (1998) emphasise superstitions as an attempt to seek control over highly stressful situations, an assertion confirmed by Foster, Weigand and Baines (2006). Another string of evidence that points in a similar direction stems from studies in which superstitious behaviour was experimentally induced by creating environments of uncontrollability (Ono, 1987).

### ***Superstition and experienced uncontrollability***

The previous findings demonstrated that superstitions often occur naturally in situations of psychological stress and under circumstances that are inherently perceived as uncontrollable (Jahoda, 1969; Vyse, 1997). Additional evidence suggests that superstitious behaviours can also be induced experimentally by creating exactly these kinds of

situational circumstances (Catania & Cutts, 1963; Ono, 1987). In his seminal study, Skinner (1948) demonstrated that in uncontrollable reinforcement situations, even pigeons develop superstitions. In his investigations, Skinner provided food reinforcement to pigeons in intervals of 15 seconds. After a few minutes, the pigeons started to execute distinctive stereotypic rituals even though reinforcement was completely independent of the pigeons' behaviour.

These rituals consisted exactly of those behaviours that were temporally contiguous with the application of the food reinforcement. Thus, one pigeon walked around in circles, another jumped from one side of the cage to another, and so on. Superstitious behaviour in humans as a result of uncontrollable reinforcement has since been replicated several times (Catania & Cutts, 1963; Ono, 1987; Rudski, Lischer, & Alert, 1999; Wright, 1962). The intricacy of sport warrants that all variables can never be brought under absolute control and it is this element of uncontrollability that breeds superstition. Personal factors, such as a strong desire for control, have the tendency to encourage superstition (Burger, 1989).

Further, Van Raalte, Brewer, Nemeroff, and Linder (1991) demonstrated that students who believed that their own actions exert some control over chance events were most likely to exhibit superstitious behaviour. Specifically, participants in this study performed 50 trials of a golf putting task in which they chose one of four different coloured golf balls for each putt. Each time a participant successfully hit the ball into the hole and then selected the same colour ball for the subsequent putt, their behaviour was defined as superstitious. As indicated above, this experimental setting with clearly uncontrollable outcomes – all participants had no without experience in the golf task – generated superstitious behaviour.

This was especially true for those students who most strongly believed that choosing the “lucky ball” actually allowed them to regain some control over the event.

Superstitious thinking can promote one’s sense of control in several ways: first, it can help a person understand what is happening in his or her environment because it provides explanations and reasons for phenomena that are otherwise inexplicable or unfamiliar. This makes the person’s world more understandable, predictable and controllable. Second, by means of superstitious beliefs and behaviours, the individual may generate solutions that increase his or her control over the source of threat.

In sum, the presented findings offer sufficient evidence for the assumption that superstitions are especially likely to occur under circumstances of low controllability, high psychological stress and feelings of uncertainty. From this angle, it is only natural to argue that these seemingly irrational thoughts and behaviours actually serve a specific benefit. Clearly, not only for the groups discussed in the previous section but for everyone in a demanding performance context, the enactment of superstitious rituals serves the beneficial function of reducing psychological tension.

## **The value of superstitions**

Coakley (2003) has suggested six possible reasons athletes utilise religious prayer: prayer as a coping mechanism for uncertain stressful situations; to help live a morally sound life; to sanctify athletes’ commitment to sport; to put sport into perspective; to establish a strong bond of attachment between teammates; and to maintain social control. The use of religious

prayer to alleviate anxiety and stress in uncertain situations is prevalent among athletes. This implies that athletes who find it especially difficult to cope with those situations of uncertainty where they find themselves helpless to “do” anything to influence the outcome of what are, for them, crucial events are likely to seek supernatural intervention through prayers. Perhaps understandably, there may be reluctance to admit that such situations commonly occur; yet, experience is likely to lead to individuals to a different conclusion.

Prayer may help individuals to lower arousal, avoid “choking” and aid them in directing their full attention to the task at hand. It will not help the individual address physical or skill inadequacies, but a well-disciplined, highly conditioned athlete may use rituals to screen out distractions and order his world so that he is free to concentrate on the game. In this sense, superstitious ritual may indeed play a very important role in the athlete’s preparation for competitions.

Moreover, the tension-reducing role of superstitious behaviour extends the literature in showing the conditioning explanation provided by Skinner (1948, 1953), that seeing a causal relationship between behaviour and “consequences” could also explain the occurrence and maintenance of superstition in humans. The conditioning might exist because sportspeople may try to ward off tension by enacting rituals, which may explain why they hold on to rituals even when the desired outcome (i.e., winning the game) is not obtained. That is, sportspeople may use rituals as a way to mentally prepare for a game. A latent function of superstition is that it may, as some authors and athletes suggest, contribute in some instances to team morale (Ofori, 2006) and team solidarity (Wrigley, 1970).



### *The influence of superstition on performance enhancement*

Given that students and athletes more often than other groups engage in performance related situations and that both groups more often than other groups engage in superstitious beliefs and behaviours, the question arises whether these superstitions actually exert an influence on achieved performance. In fact, when asked for the reasons behind their superstitions, many the students (Albas & Albas, 1989; Vyse, 1997) as well as the athletes (Ciborowski, 1997; Womack, 1981) reported engaging in superstitious thoughts and practices in order to improve their performance.

In sport, there is emerging evidence to suggest that some athletes use religious practices, including prayer, as both a coping mechanism to deal with stress and anxiety and to facilitate performance enhancement (Czech et al., 2004; Park, 2000). Superstitious practices also provide a means for athletes to gain confidence and feelings of control in competitive situations (Becker, 1975). Thus, superstitious behaviours function as a sort of “psychological placebo” (Neil, 1980), reducing anxiety, building confidence and helping athletes to enhance their performance.

There is other evidence outside of sport that suggests that superstitions have an impact on performance. For instance, in pharmacology (Macedo, Banos, & Farre, 2008) and clinical psychology (Rosenthal & Frank, 1956; Shapiro, 1960), the execution of superstitions may indeed lead to superior performance simply because one believes in the effect. Keinan (1994, 2002) explains her findings in a similar way. He suggests that superstitions and superstitious thinking might help the individual to reduce the experienced stress. On a more theoretical but not empirically tested level, he also suggests that superstitious thinking can

create a self-fulfilling prophecy: a practiced superstition might increase optimism, decrease stress and thus improve task performance. This view also seems reasonable from a general perspective. Arguing from an evolutionary perspective, which reasons that any kind of behaviour will prevail as long as it is adaptive (Buss, 2000), one can contend that in order to maintain them, a beneficial function of superstitious behaviours seems to be inevitable. The question remains, of course, whether this benefit manifests itself as an improvement in performance. In fact, apart from anecdotal evidence on the part of students or athletes, and speculations similar to those by Neil (1980) and Keinan (2002), empirical evidence concerning the effect of superstitions on performance enhancement does not exist. Rather, despite the high prevalence of superstitions and the knowledge that these behaviours are especially likely to emerge in the context of performance tasks, not much empirical attention has focused on the performance consequence of superstition in sport.

### ***The prevention of performance decrement by superstitions***

Anxiety and negative thoughts prior to and during an athletic competition have the potential to derail performance (Jones, 1995). Athletes report that training and practice provide them with a large measure of control over performances in competition, yet there still remains an element of chance that affects sport's enduring appeals (Neil, 1982). But uncertainty about the element of chance detracts from athletes' confidence and may contribute to anxiety. Anxiety and low confidence have served to blight athlete performance. Previous research has indicated that religiosity (Buhrmann and Zaugg, 1983), locus of control beliefs, importance of success and alleviation of anxiety (Womack, 1992) are some of the factors which may facilitate the use of superstitious behaviour in the sporting context. The fear of failure and re-injury can be a major source of anxiety and can

inhibit an athlete's performance. It is, therefore, a likely prime breeding ground for superstitious behaviour.

An athlete's beliefs, superstitions and expectations about an individualised pre-game ritual pattern may contribute to the psychological value of preventing performance impairment thoughts. The (potentially) illusory effect of superstition on performance is called psychological placebo by Neil (1980), who sought to explain the positive effects of rituals in terms of self-fulfilling prophecies and confirmation processes. Rituals "work" because the person believes in them and expects it to enhance his performance or enhance his perceived control. These findings indicate that rituals can play a role in reducing psychological tensions for sportspersons. Furthermore, these findings support the idea that some perceptual biases (i.e., superstition) may be "highly adaptive under many circumstances" (Taylor & Brown, 1988, p. 205).

### ***The prevention of development of helplessness by superstitions***

Superstitious behaviour may be generated by needs to establish control as well as to enhance self-efficacy. That is, attributing outcomes to controllable factors has been consistently associated with high self-efficacy (Bandura, 1997; Haney & Long, 1995), while attributing outcomes to uncontrollable factors has been consistently associated with low self-efficacy and learned helplessness (Bandura, 1997; Seligman, 1975). In situations of uncertainty, the attempt to gain control through superstitious behaviour may have a positive effect on self-efficacy. In contrast, failure to gain control through superstitious behaviour may indicate very low self-efficacy and even learned helplessness.

### *Superstition as a coping mechanism*

Malinowski advanced what has become probably the most famous and influential of all psychological theories of superstition. Malinowski's 'theory of the gap' claims that magic serves to reduce anxiety, and to fill the void of the unknown. The canoe builder has to deal with some material which he is never certain that it will stand the strain, or the healthy person suddenly finds his strength failing "... his anxiety, his fears and hopes, induce tension in his organism which drives him to some sort of activity ... His nervous system and his whole organism drive him to some substitute activity ... His organism reproduces the acts suggested by the anticipation of hope" (Malinowski, 1948:p79-81).

It is important to note that in Malinowski's theory the activity which anxiety prompts is a 'substitute activity', something which occurs in place of instrumental acts, which the actor would engage in if they were considered likely to be effective. It is possible to find consequences of such substitute activities. Such acts thus fulfil a general cathartic function for those who perform them. Now, as such, this essentially behaviourist argument does not seem to imply anything about the precise activity. Thus, superstitious behaviours function as a sort of coping mechanism for the uncertainties inherent in sport.

## **The statement of the problem**

A review of existing literature on superstitions revealed that, despite their superficial irrationality, superstitious beliefs and behaviours are prevalent. This is mainly true in conditions characterised by high stress, perceived uncertainty, helplessness, low control and unpredictable outcomes. Superstitious beliefs especially abound in the world of sports, as well as other highly-esteem professions. As it happens, these jobs share many features with some of the conditions that have been shown to elicit superstitions. With these findings at hand, some researchers started to speculate about potential beneficial functions of superstitious behaviours. Clearly, the most influential benefit of superstitions for many is serving as a secondary control strategy in situations of high stress. Superstition helps its users to cope with anxiety, uncertainties and uncontrollable outcomes.

Furthermore, superstition has an influence on performance because of the perceived increased optimism and decreased stress (Damisch et al., 2010). These beneficial functions of superstition may not be enough to explain the high prevalence of superstitious beliefs and behaviours among these professional groups, or their continuous maintenance. Despite the plausibility of this perspective of the functionalist nature of superstitions, empirically conducted research concerning superstition has measured the correlates of superstitious beliefs with the Paranormal Belief Scale (PBS) by Tobacyk (1988), and is thus based on a scale that measures only negative superstitions, without much focus on positive beliefs and superstitious behaviour. There has been an exceedingly small amount of research in sports psychology that has taken these distinctions into consideration. This makes it difficult to interpret research findings on personality and environmental correlates of superstitiousness in an unambiguous manner.

Existing findings, however, do support the notion that the frequency and types of superstitious behaviours are found in sport differs according to the playing level and gender, but none have established the relationship between superstitious beliefs and behaviour. Even if superstitious beliefs may serve as the initiation of superstitious rituals, and superstitious behaviour may serve as maintenance of superstitious rituals for athletes searching for meaning in their inexplicable, uncertain and unpredictable sporting world, then there is the need to establish if there is any relationship between the two.. Superstition makes the person's world more understandable, predictable and controllable. One might ask whether positive and negative superstitious beliefs serve similar psychological functions. Hence, there is the need for a clear distinction between negative and positive superstitions beliefs and their psychological functions.

Most of the studies on superstition were conducted using the superstition subscale of the Paranormal Belief Scale (Tobacyk, 2004; Tobacyk & Milford, 1983). This instrument, however, only consists of items assessing so-called "negative" superstition, which refer to "bad luck" (e.g. breaking a mirror, the number 13, black cats), and neglects "positive" superstitions, which refer to lucky events (e.g. carrying a charm, crossing fingers, touching wood). Both negative and positive superstitions may serve different psychological functions. Negative superstitions elicit bad luck which has debilitating consequences on the athletes' performance, while positive superstitions are deemed to elicit good luck, which can improve self-efficacy. Wiseman and Watt (2004) conducted an empirical study demonstrating that these positive superstitions matter too. This study has an added advantage in the sense that it measures superstition using a belief in superstition

questionnaire scale (Wiseman and Watt, 2004) that measures positive and negative superstitious beliefs.

A further difficulty in measuring superstition among sportspersons is that the data measured consist of only superstitious behaviour (Bleak & Frederick, 1998; Burhmann and Zaugg, 1981; Burke et al., 2006; Ofori, 2006). Superstitious beliefs are more cognitive and emotional processes, while superstitious behaviour is behavioural. The distinction between superstitious belief and superstitious behaviour is rather subtle, since one is sometimes defined in terms of the other. Belief, like attitude, is an intervening variable, (i.e. it cannot be directly observed but must be inferred from variables which are themselves observable) (Krause, 1969).

In research on superstition, the prevailing variable, superstitious belief, is needed to supply a connecting link between certain personality and situational factors on one hand and superstitious behaviour on the other. Superstitious beliefs may serve as the initiation of superstitious rituals, and superstitious behaviour may serve to maintain superstitious rituals. People act and perceive things in accordance with their belief systems, and these beliefs can influence emotional states and attentional processes (Jones & Swain, 1995; Wiseman, 2003). The frequency and types of superstitious behaviours found in sport are documented in several studies (Buhrmann, Brown, & Zaugg, 1982; Fischer, 1997), but none has established a relationship between superstitious beliefs and behaviour. Could it be that positive and negative superstitious beliefs are related to superstitious behaviour? As such, the current research sought to address some of these measurement gaps in the area of superstition in general, and in sports in particular, by using scales that measured both superstitious behaviour and positive and negative beliefs in sport. Considering this

limitation in the measurement of superstition, the current research will draw on established measurement scales to investigate the relationship between superstitious beliefs and superstitious behaviours.

Researchers previously thought that superstitious thinking is mainly restricted to primitive tribes (Frazer, 1890/1959), young children (Freud, 1919/1959; Piaget, 1929), or individuals suffering from certain mental disorders (Wilder, 1975). However, recent studies have indicated that superstitions are prevalent in developed countries too (Vyse, 1997; Burke et al., 2006). Otis and Kuo (1984) compared superstitious beliefs among university students in Singapore to those in Canada and found that the Singaporean sample showed a substantially higher level of global paranormal belief. This cross-cultural difference was most marked for groups of items related to religious concepts and to spiritualist phenomena, although differences also were evident for individual items concerning extraordinary life forms and precognition. McClenon (1990) also reports college students in the Republic of China as having a higher level of belief in superstition than their American counterparts.

Furthermore, some noteworthy cultural differences emerged in a comparison of American and Japanese baseball players (Burger and Lynn, 2005). They found Japanese players were less likely to engage in superstitious behaviour than the American players. They asserted their observation that individual responsibility for failure is emphasised to a much greater degree in Japan than in the United States. In particular, Japanese players are more likely to embrace the notion that their performance is the result of effort, not luck. These examples showed a substantially higher level of global superstition belief. The fact that qualitative differences in superstition beliefs are related to culture is further evidenced by, and in fact



partly forms the basis of, anthropological investigations (Plug, 1976). Not much has been done in the area of sport with regards to cross-cultural studies in superstition. The present study will seek to find out if cultural difference exists between a developed country and a less developed country, using the same measuring scales.

The inevitable conclusion to be drawn from the studies which have been discussed is that there is evidence of inconsistency in superstitious belief in relation to the demographics, and scant cross-cultural research on the phenomena under investigation.

With reference to the discussions on demographics and superstitions, the review of empirical literature identified some gaps in the studies showing the pattern of correlations between superstitious beliefs types, superstitious behaviour and demographic variables (age, gender and ethnicity), as reviewed under the section “Superstitious personality”. One of the purposes of the present research was to find an answer to the questions of whether superstitious behaviours and beliefs are indeed related, and to find cultural differences between British and Ghanaian student athletes in their beliefs and experiences regarding superstitions usage. Specifically, the research was conducted to find empirical evidence for a relationship between types of superstitious beliefs and superstitious behaviour, and cultural differences across demographic variables (e.g., age, gender).

It is essential to point out that very little is known about the actual extent to which individual athletes use religious and superstitious rituals in their life. Throughout history, people have used rituals based on religion and superstition to cope with uncertainties in their lives. Because sport competitions involve a high degree of uncertainty, it is not surprising that many athletes use religious prayer, spiritual meditation and superstitious

practices to make them feel as if they have some control over what happens to them on the playing field. Bleak and Frederick (1998) found that religiosity, locus of control and anxiety were related to higher usage of specific superstitious rituals (prayer); thus, it seems that athletes may develop rituals that correspond with their personalities and personal religious beliefs. What appears to be lacking in the current sport psychology literature is a systematic examination of the relationship that exists between athletes' superstitious, spiritual and religious experiences in sport. The present study was designed to examine this phenomenon by examining it from the first-person perspective of student athletes. Student athletes have to face conditions (e.g. quality of equipment, weather) or opponents that are determined by external, uncontrollable factors. This lack of control may encourage an athlete to adopt a control strategy.

A number of empirical studies have confirmed age-differential endorsement of primary and secondary control strategies. Cross-sectional studies provide correlational evidence that older, as compared with younger, adults more frequently use strategies associated with secondary control (Wrosch & Heckhausen, 1999) and related constructs such as emotion-focused coping (Folkman, Lazarus, Pimley, & Novacek, 1987). Folkman et al. (1987, p. 38) defined emotion-focus coping as "coping effort that does not seek to directly solve the problem, but instead center on managing the emotional reactions that result from the primary and secondary appraisals." Are primary control strategies associated with problem-focused coping? Problem-focused coping "involves the utilization of active efforts to address the stressor." Folkman et al. (1987, p.38). The current research sought to extend the literature in the area by investigating the possible relationships that the control strategies of coping and helplessness have with different types of superstitious beliefs in participants

from both a developed country (the UK) and a developing African country (Ghana), which is a less studied population. This extends the literature by using participants from a group that is not commonly researched, hence bringing to light these psychological constructs from an unusual population.

With regard to secondary control, the current study addressed two strategies that represent theoretically derived and empirically supported subcomponents of the construct (e.g., self-protection and goal disengagement; Wrosch & Heckhausen, 1999). First, the study investigated the secondary control strategy of positive reappraisal (e.g., seeing the positive side of a bad situation). Positive reappraisals become increasingly important for people if the opportunities for goal attainment decline, because endorsement of control strategies is conducive to the individual's subjective well-being. Second, the study examined the secondary control strategy of lowering aspirations. This strategy is related to goal disengagement and rescaling goals. Goal disengagement is normally a product of negative life events and is particularly maladaptive if the athlete faces challenging conditions for goal attainment

As a result of the fundamental value of control, people may attempt to sustain the feeling of control even when they recognise that actual control is limited or non-existent. As such, an athlete's perception of control has an important influence on resource appraisals and, accordingly, it can help the athletes to understand what is happening in their environment. Could it be that the extent to which people report their state of helplessness influences their quest to adopt superstitious strategies (secondary control), or is it that superstitions engaged in performance-related contexts do not only relate to learned helplessness?

However, studies have indicated that exposure to conditions of stress or danger (Kienan, 1994), uncertainty and uncontrollability (Malinowski, 1948), and anxiety, frustration or threat (Rosenthal and Siegel, 1959) create an enabling environment for superstitions to thrive. What are the psychological constructs that might account for the development of superstition in conditions of stress or uncertainty?

Although secondary control may not be the only reason people turn to superstition, one of the purposes of this study was to explore the relationships that exist between types of control and superstitious beliefs and superstitious behaviour. The central purpose of the present research is to examine circumstances under which superstition will be most pronounced, and to examine individual differences in the extent to which people feel the need to carry out superstitious rituals. When will people be most prone to developing superstitious rituals? It is argued that people carry out rituals in uncertain situations in which the outcome is not only uncertain but also important to them. Another question is whether differences in personal control will influence the extent to which people feel the need to carry out rituals. It can be argued that people who differ in locus of control – the extent to which people see the environment as controllable – also differ in the extent to which they feel tension, and hence differ in the extent to which they are inclined to be superstitious.

Nonetheless, virtually no research has sought to examine the relationship between superstition and psychological constructs (personal control, learned helplessness, coping mechanism and control strategies) in a single study. The only relevant research was a study by Case et al. (2004), which investigates the relationship between primary and secondary control and the use of superstitious strategies under conditions of uncertainty and stress.

Their findings suggest that, as the need to control outcomes becomes increasingly salient, the use of superstitious strategies may represent attempts at secondary control. However, this research did not reveal which types of superstitious beliefs relate to primary and secondary control strategies, coping and helplessness.

## **Rationale and Purpose**

It becomes not just surprising but also intriguing to find that superstition continues to play a role in modern day sporting events. This situation clouds the efforts of individuals and relegates to the background the role of individuals in success stories when it comes to sports. To what extent has the issue of superstition affected human preparation towards sporting events? And to what extent has it had an effect (positive and negative) on individual athletes and the team?

In spite of the sterling performance of African athletes, coupled with their potential contribution to the development of sports, there is a dearth of research in this part of the world, especially in the area of sport psychology. African athletes are the least researched group in sport psychology literature (Ofori, 2006). Although there has been a recent increase in empirical research among African-American athletes, a quick review of the literature in this field shows that resources and interest seem to be primarily devoted to investigating athletics (track and field), baseball and basketball. Furthermore, the existing empirical work in this region is scattered and scant, lacking the necessary sport psychological theories and methodological rigour that has revolutionised sport sciences in the past decade or two. The rationale for this study is thus informed by these obvious gaps in empirical research in the area and the definitive questions that may need answers not only in the few areas that concentrate on the Western world. This study contributes to the limited literature in the area, especially among professional soccer athletes from Sub-Saharan Africa. This study also adds to the literature on performance enhancement and coaching, now that most European clubs recruit players of African descent.

In recent times, where many individuals from different parts of the world converge under one umbrella, referred to as a football team, to play in professional/elite football in Europe and other parts part of the world, it is surprising that no research has documented superstition and religious pre-game rituals among professional footballers in both Europe and Africa. This researcher's firm belief that an understanding of the cultural diversity and an appreciation of its relevance in relation to this whole issue of superstition and pre-game rituals has helped in addressing the problem of individual differences in the evaluation process, and further adds to existing literature, opening up the area for other research interests. Furthermore, the understanding of cultural diversity usefulness for applied sports psychologists in setting up intervention programmes, coupled with the teaching of mental skills for athletes from Africa. The results of this study may help performance enhancement specialists to develop better psychological skills training (PST) programs to impact on athletes.

Moreover, no research was found to have studied elite footballers and their superstitious and religious rituals at a major tournament, such as the FIFA World Cup. Nor was any research found that addressed the functional benefits of professional footballers' superstitious and religious rituals. Lastly, no studies are available addressing the issue of athletes' ritualistic behaviour in relation to their cognitive appraisal of career difficulties.

Thus, this study provides information about the consequences of superstition and how it is perceived to be effective, and also seeks to find out whether the degree of superstitious behaviour practiced by athletes varies according to their social orientation.

This study seeks to determine the extent of superstition involved in professional football. The present study seeks to find out, the perceived functions of pre-game rituals among professional footballers. Finally, the current research examines the extent to which personal superstition and conform superstitions can influence performance in a penalty task.



# EMPIRICAL WORK

## CHAPTER 3: STUDY 1

The literature on superstitions suggests that the measurements of such beliefs are subject to the demand characteristics of the test context. In the sporting context, not much has been done in respect to athletes' superstitious beliefs systems. Furthermore, the little that has been done has concentrated on athletes from Western cultures. This, in effect, has not prevented researchers and applied sport science practitioners from taking interest in individual athletes' belief systems emerge directly out of such cross-cultural differences. Few other studies have examined individual dimensions of superstitious beliefs and behaviour in a sporting context. Ter Keurst (1939) found superstitious beliefs to be stronger in geographical regions of low socioeconomic status.

Ethnic background has been included in some investigations of superstition because of the socially marginal status accorded to some ethnic groups within a given society. Giving due acknowledgment to the extent that under privileged societies continue to be associated with superstitious beliefs, the current study sought to test the social marginality hypothesis of paranormal belief. Irwin (1993) claims that the significant data for superstitions are nevertheless consistent with the social marginality hypothesis. Burger and Lyn (2005) asserted that the differences between their participants appear to reflect larger cultural differences between a collectivist culture (Japan) and an individualistic culture (the United States).

Few investigations have been made of the variable of ethnicity in relation to superstition in sports, possibly because athletes resist sharing their beliefs/practices, thinking they will become less effective. Another difficulty is measurement and the perceived intrusiveness of questions used as indices to evaluate what constitutes superstitious beliefs or religious beliefs (Irwin, 1993).

It is a psychological adage that superstitions are held because they serve a significant psychological function. For centuries, people have believed that the use of certain objects or the performance of certain rituals will influence their own (or others') luck. Belief in luck also appears to be an important source of optimism for people in their daily life (Darke & Freedman, 1997a). This may be grounded in objective reality or may be intrinsically illusory; thus, sport scientists are interested in the functions served by superstitious beliefs. The view that superstitions are psychologically beneficial to their believers suggests that the personalities of superstition believers are essential areas to be studied. Research into this field is reasonable substantial in the main stream psychology. Hence, the sport psychology literature is nonetheless in need of some sport related studies, and this study is offered toward that end.

The purpose of the first study was to explore the prevalence of several superstitious beliefs and behaviour within UK and Ghanaian student populations. The study aimed to get a general overview on whether university student athletes exhibit superstitions, as the extant literature shows (Albas & Albas, 1989; Gallagher & Lewis, 2001). Specifically, this study also sought to examine cultural differences between British and Ghanaian students on their experiences in superstition usage, if any. The study also wished to detect specific the relationship between variables and behaviours and both negative and positive beliefs. Age

was controlled to prevent possible age disparities that are likely to influence the results due to differences in school starting age in the two countries in which the research took place. This was done to prevent a situation where age difference between the two populations under investigation skewed the results. The study used well-established questionnaires for superstitious beliefs and behaviour, and administered them to university students from the United Kingdom and Ghana. The current study sought to examine the possible difference in superstitious beliefs and behaviour among student athletes in relation to gender and nationality, while controlling for age.

## Research Aims

1. To find out if there are differences between British and Ghanaian students in terms of types of superstitious beliefs and behaviour.
2. To examine the relationship between superstitious behaviour and superstitious beliefs.

The following hypotheses were advanced.

**Hypothesis 1:** It was hypothesised that there will be a significant main effect for gender on the three outcomes (positive superstitious beliefs, negative superstitious beliefs and superstitious behaviour).

**Hypothesis 2:** It was hypothesised that there will be a significant main effect for nationality on the three outcomes.

**Hypothesis 3:** It is hypothesised that there will be a significant interaction of gender and nationality on the three outcomes.

**Hypothesis 4:** It was hypothesised that there will be a significant relationship between superstitious belief types and superstitious behaviour.

## Method

### Participants

The participants were 349 student athletes from the United Kingdom and Ghana, consisting of 210 males and 165 females. The ethnic breakdown was 177 British students and 197 Ghanaian students. The age range, mean age and the number in each group sampled are represented below.

### Gender and Age Statistics

*Table 1: Gender and Age Statistics*

Ethnicity	Mean Age	Age Range	N
British Students	21.18 years	19-45 years	177
Ghanaian Students	24.11 years	19-45 years	197
British Females	21.2 years	19-32 years	71
British Males	21.16 years	19-45 years	106
Ghanaian Females	23 years	19-40 years	93
Ghanaian Males	25.11 years	19-51 years	104

### Procedure

Data collection took place in Ghana and the United Kingdom, with permission granted and in compliance with the Aberystwyth University Ethics Committee. The participants in this investigation were given a brief explanation of the purpose of this study before being given the set of surveys. After the explanation, all participants were asked to read and sign the informed consent form. Administered by the author, each group of students completed the inventories during their seminar and tutorial periods. No lecturers were present during the administration of the questionnaires. The inventories were administered in the following order: one-page demographic questionnaire, the Superstitious Ritual Questionnaire (SRQ), the Belief in Superstition Questionnaire (BSQ), the Measurement Instrument for Primary

and Secondary Control Strategies (MIDUS), the Belief in Personal Control Scale (BPCS), the Maladaptive Achievement Pattern Questionnaire (MAPQ) and the short version of the Marlowe-Crowne Social Desirability Scale (MCSDS). To ensure confidentiality, the questionnaires were locked in a secure room. Although data were collected from 375 students, 26 were excluded from the results due to incomplete information.

### **Instrumentation**

Each participant completed a set of standard demographic questionnaires designed for the present study. The information collected centred on participants' age, ethnicity, gender and the sports they played. Ethnicity was determined by the geographical region ticked by the participants on the demographic questionnaire. Information obtained from the demographic questionnaire was used to describe the sample. In addition, age, gender and ethnicity were included in the research analyses.

The *Superstitious Ritual Questionnaire* (SRQ; Bleak & Frederick, 1998) was utilised to measure superstitious beliefs, behaviour and rituals. The questionnaire consisted of 46 questions separated into seven categories of superstitious behaviour, including clothing and appearance (rituals that are clothing-related, e.g., jersey number, lucky socks, etc.), fetishes (these are centred on fetishism, e.g. team mascot, lucky charms), pre-game (rituals before the game, e.g. music during warm up), game (rituals during the game, e.g. gum chewing), team ritual, prayer, and superstition of the coach (these are rituals that are initiated by the coaches, e.g. the coach takes a lucky charm to the game). The total superstition score is then found by determining whether or not an athlete performs these superstitious behaviours and the degree of effective outcome. The degree of effectiveness of each ritual

was determined by the athletes' indication on a five-point Likert scale ranging from not at all effective (1) to very effective (5). The sum of the number of rituals used by the participant determined the total superstitious behaviour (Bleak & Frederick, 1998). The SRQ (Bleak & Frederick, 1998) was developed based upon the work of Buhrmann and Zaugg (1981), however; the psychometric properties have not been established.

The *Belief in Superstition Questionnaire* (Wiseman & Watt, 2004) was used to measure types of superstitious beliefs. Participants were asked to indicate the degree to which they endorse three negative and three positive superstitious beliefs using a Likert scale with five response options (anchored with Definitely Yes and Definitely No). The three negative items concerned walking under a ladder (Have you avoided walking under a ladder because it is associated with bad luck?), breaking a mirror (Would you be anxious about breaking a mirror because it is thought to cause bad luck?) and the number 13 (Are you superstitious about the number 13?). The three positive items concerned crossing fingers (Do you say fingers crossed or actually cross your fingers?), touching wood (Do you say touch wood or actually touch or knock on wood?) and carrying a lucky charm (Do you sometimes carry a lucky charm or object?). All these superstitions are culturally relevant across the student population in the countries where the data was gathered.

**Control strategies.** Control strategies were measured with a 14-item Measurement Instrument for Primary and Secondary Control Strategies (MIDUS) instrument using a four-point Likert scale (1 = not at all, 4 = a lot; developed from Peng & Lachman, 1994). The participants indicated how well the items described them. Wrosch, Heckhausen and Lachman (2000) conducted an exploratory factor analysis which confirmed the theoretically driven three-factor model. They labelled the three scales of control strategies

as “persistence in goal striving (primary control)” (Cronbach’s  $\alpha = .77$ ; eigenvalue = 1.14), “positive reappraisals (secondary control)” (Cronbach’s  $\alpha = .78$ ; eigenvalue = 4.13), and “lowering aspirations (secondary control)” (Cronbach’s  $\alpha = .63$ ; eigenvalue = 2.04). They provide evidence for the validity of the three scales when they performed zero-order correlations with generalised control beliefs (mastery; e.g., Lachman & Weaver, 1998a; Pearlin & Schooler, 1978). Both persistence ( $r = .47$ ,  $p < .01$ ) and positive reappraisals ( $r = .39$ ,  $p < .01$ ) showed positive correlations with mastery beliefs, whereas lowering aspirations was negatively correlated with mastery beliefs ( $r = -.20$ ,  $p < .01$ ). Peng and Lachman’s (1994) control strategy scale was utilised to measure types of control, with the above stated psychometric properties.

The *Belief in Personal Control Scale* (Berrenberg, 1987) was utilised to measure personal control. The BPCS is a 45-item instrument used to measure three dimensions of perceptions of personal control: external control (ExtC), exaggerated control dimensions (ExagC) and God-mediated dimension (GM). ExtC assesses the extent to which an individual believes his or her outcomes are self-produced (internally) or produced by fate or others (externally). ExagC dimension measures an extreme and unrealistic belief in personal control. The God-mediated dimension measures the belief that God can be solicited in the attainment of outcomes. This dimension allows for the important distinction to be made between individuals who believe that they have little or no control over their outcomes (externals) versus those who believe they control outcomes indirectly through God. A higher score of ExtC means more perceptions of internal control, higher scores of ExagC suggest exaggerated belief in control and higher GM scores indicate less belief in God as mediator of control. The reliability of each of the three factors was established



using Cronbach's alpha as a measure of internal consistency. The test has a reliability of .85 (F1 – internal), .88 (F2 – exaggerated), and .97 (F3 – mediator). The BPCS has been found to have excellent construct validity with a range of .85 - .95 (Berrenberg, 1987).

The *Maladaptive Achievement Pattern Questionnaire* (Prapavessis & Carron, 1988) was used to assess the degree to which participants possessed maladaptive perceptions of a cognitive, motivational and emotional nature concerning their failure experiences. It comprises six cognitive questions – two motivational questions and four emotional questions – all of which were rated on a seven-point scale. One example of a cognitive measure used to assess a maladaptive belief associated with learned helplessness is the following: “When you are losing a match do you find that your strategies to change the situation deteriorate or become more sophisticated?” One example of a motivational measure used to assess a maladaptive achievement pattern associated with learned helplessness is, “When you are losing a match do you try harder or less hard?” One example of an emotional measure used to assess a maladaptive achievement pattern associated with learned helplessness is, “Do you get depressed about how your sporting performance is going for you?”

Two criteria were used to classify subjects on achievement patterns. First, one question from each area had to be endorsed positively (i.e., at least one cognitive, one emotional and one motivational question). Second, at least four questions associated with the maladaptive achievement patterns of learned helplessness had to be endorsed. Endorsement was taken to include a score of above 4 on the 7-point scale. The criteria used to classify subjects into helpless/non-helpless groups on the basis of their maladaptive achievement patterns were extremely conservative (i.e., 4 out of 12 questions and a score of 4 or above on a 7-point

scale). Participants with scores of 48 points and above on the scale were classified as helpless, while those who scored less than 48 points were classified as non-helpless. This is a strength of the present study, not a limitation.

The short version of the *Marlowe-Crowne Social Desirability Scale* (MCSDS) by Marlowe and Crowne (1964) was used to validate the participants' responses. The short version of the MCSDS consists of 13 items, five keyed true and eight false. The items are dichotomously scored. For each answer the respondent provides that matches the response given above (i.e., T = T or F = F), assign a value of 1. For each discordant response (i.e., the respondent provides a T in place of an F or an F in place of a T), assign a value of 0. Total score can range from 13 – extremely socially desirable responding (where all responses “match”), to 0 (where no responses “match”).

The *Brief COPE* (Carver, 1997) was used to measure the coping strategies of participants. It comprises a total of 28 items, made up of self-distraction (2 items), active coping (2), denial (2), substance use (2), emotional support (2), instrumental support (2), behavioural disengagement (2), venting (2), positive reframing (2), planning (2), humour (2), acceptance (2), religion (2) and self-blame (2). Participants were asked to indicate the degree to which they endorse items using four response options (anchored with 1 “I don't do this at all”, 2 “I do this a little bit”, 3 “I do this often”, 4 “I do this a lot”).

## **Analysis of data**

SPSS was used to analyse the data. The data were screened to detect missing data and outliers by using boxplot. A 2 by 2 analysis of covariance was conducted to assess the main and interactive effects of gender and nationality on positive superstitious beliefs, negative superstitious beliefs and superstitious behaviour. Age was entered as a covariate to control for individual difference in all the ANCOVA run. A follow-up one-way ANCOVA was run to establish if there was any significant effect on any of the interactions.

Pearson correlation was used to establish the relationship between the variables under study. In all the analyses, the author did not include missing values in all the statistical analysis of the raw data, and age, gender and ethnicity were controlled in the regression analysis.

## Results

A 2 (gender: male, female) by 2 (nationality: British, Ghanaian) analysis of covariance was conducted to assess the main and interactive effects of gender and nationality on positive superstitious beliefs. Age was entered as a covariate to control for individual difference. The mean scores for positive superstitious beliefs, negative superstitious beliefs and superstitious behaviour are presented in Table 2.

Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances or homogeneity of regression slope. After controlling for age, significant main effects were observed for both gender,  $F(1, 364) = 43.27, p < .05, \eta_p^2 = 0.11$ , and nationality,  $F(1, 364) = 162.12, p < .05, \eta_p^2 = 0.31$ . Females ( $M = 8.37, SD = 3.12$ ) engaged in more positive superstitious beliefs than males ( $M = 7.02, SD = 2.64$ ). British student athletes ( $M = 9.21, SD = 2.80$ ) engaged in more positive superstitious beliefs than Ghanaian student athletes ( $M = 6.14, SD = 2.20$ ). Both main effects, however, were qualified by a significant interactive effect,  $F(1, 364) = 13.32, p < .05, \eta_p^2 = 0.04$ . A follow-up one-way ANOVA indicated that there was a statistically significant difference at the  $p < .05$  level for positive superstitious beliefs scores for all the six gender and nationality groups:  $F(3, 365) = 71.17, p = .00$ . The actual difference in the mean scores between the groups was large (large effect size according to Cohen's (1988) guidelines). The effect size calculated using eta squared was .37. Post-hoc comparisons using the LSD test indicated that the mean score for Female British ( $M = 10.73, SD = 2.40$ ) was significantly different from Male British ( $M = 8.19, SD = 2.58$ ). There was also a significant difference between Female British ( $M = 10.73, SD = 2.40$ ) and Female Ghanaian ( $M = 6.51, SD = 2.25$ ), and Female British ( $M = 10.73, SD = 2.40$ ) and

Male Ghanaian ( $M = 5.80$ ,  $SD = 2.11$ ). This shows that British female student athletes engage in positive superstitious belief more than their male counterparts and both male and female Ghanaian student athletes. There was a significant difference between Female Ghanaian ( $M = 6.51$ ,  $SD = 2.25$ ) and Male British ( $M = 8.19$ ,  $SD = 2.58$ ). This indicates that male British student athletes engage in more positive superstition beliefs than female Ghanaian student athletes. Also, there was a significant difference between Female Ghanaian ( $M = 6.51$ ,  $SD = 2.25$ ) and Male Ghanaian ( $M = 5.80$ ,  $SD = 2.11$ ). This is an indication that female Ghanaian student athletes engage in positive superstition more than their male counterparts. A significant difference existed between Male Ghanaian ( $M = 5.80$ ,  $SD = 2.11$ ) and Male British ( $M = 8.19$ ,  $SD = 2.58$ ). The results indicate that male British student athletes exhibit more positive superstitious beliefs than male Ghanaian student athletes.

Table 2: The mean scores for positive superstitious beliefs, negative superstitious beliefs and superstitious behaviour.

Dependent Variable	Factors	Obtained		Adjusted	
		Mean	Std. Deviation	Mean	Std. Deviation
Positive Superstitious Beliefs	Females	8.37	3.12	8.62	2.36
	Males	7.02	2.64	7.00	2.34
	British	9.21	2.80	9.46	2.38
	Ghanaian	6.14	2.20	6.16	2.34
	FB	10.73	2.40	10.75	2.38
	MB	8.19	2.58	8.21	2.39
	FG	6.51	2.25	6.51	2.34
	MG	5.80	2.11	5.78	2.44
Negative Superstitious Beliefs	Females	7.34	3.23	7.59	2.63
	Males	6.23	2.71	6.19	2.60
	British	8.06	3.30	8.35	2.73
	Ghanaian	5.47	2.02	5.42	2.67
	FB	9.44	3.20	9.50	2.63
	MB	7.14	3.04	7.21	2.65
	FG	5.69	2.11	5.67	2.59
	MG	5.28	1.93	5.18	2.71
Superstitious Behaviour	Females	39.73	38.11	38.99	37.01
	Males	44.31	42.62	44.52	36.39
	British	24.59	19.70	25.45	38.61
	Ghanaian	59.44	47.93	58.06	37.86
	FB	24.44	20.06	25.31	37.18
	MB	24.70	19.56	25.59	37.45
	FG	52.81	44.61	52.67	36.73
	MG	64.90	50.05	63.45	38.48

Note: FB = Female British, MB = Male British, FG = Female Ghanaian and MG = Male Ghanaian.

A 2 (gender: male, female) by 2 (nationality: British, Ghanaian) analysis of covariance was conducted to assess the main and interactive effects of gender and nationality on negative superstitious beliefs. Age was entered as a covariate to control for individual difference.

Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances or homogeneity of regression slope. After controlling for age, significant main effects were observed for both gender,  $F(1, 364) = 25.76, p < .05, \eta p^2 = 0.66$ , and nationality,  $F(1, 364) = 102.41, p < .05, \eta p^2 = 0.22$ . Females ( $M = 7.34, SD = 3.23$ ) engage in more negative superstitious beliefs than males ( $M = 6.23, SD = 2.71$ ). British student athletes ( $M = 8.06, SD = 3.30$ ) engaged in more negative superstitious beliefs than Ghanaian student athletes ( $M = 5.47, SD = 2.02$ ). Both main effects, however, were qualified by a significant interactive effect,  $F(1, 364) = 10.64, p < .05, \eta p^2 = 0.03$ . A follow-up one-way ANOVA indicated that there was a statistically significant difference at the  $p < .05$  level for negative superstitious beliefs scores for some of the six gender and nationality groups:  $F(3, 365) = 71.17, p = .00$ . The actual difference in the mean scores between the significant groups was large (large effect size according to Cohen's (1988) guidelines). The effect size calculated using eta squared was .26. Post-hoc comparisons using the LSD test indicated that the mean score for Female British ( $M = 9.44, SD = 3.20$ ) was significantly different from Male British ( $M = 7.14, SD = 3.04$ ). There was also a significant difference between Female British ( $M = 9.44, SD = 3.20$ ) and Female Ghanaian ( $M = 5.69, SD = 2.11$ ); Female British ( $M = 9.44, SD = 3.20$ ) and Male Ghanaian ( $M = 5.28, SD = 1.93$ ). This shows that British female student athletes engage in negative superstitious beliefs more than their male counterparts and both male and female Ghanaian student athletes. There was a significant difference between Female

Ghanaian ( $M = 5.69$ ,  $SD = 2.11$ ) and Male British ( $M = 7.14$ ,  $SD = 3.04$ ). This indicates that male British student athletes engage in negative superstition beliefs more than female Ghanaian student athletes. However, there was no significant difference between Female Ghanaian ( $M = 5.69$ ,  $SD = 2.11$ ) and Male Ghanaian ( $M = 5.28$ ,  $SD = 1.93$ ). This is an indication that female and male Ghanaian athletes do not differ in their engagement in negative superstitious beliefs. A significant difference existed between Male Ghanaian ( $M = 5.28$ ,  $SD = 1.93$ ) and Male British ( $M = 7.14$ ,  $SD = 3.04$ ). The results indicate that male British student athletes display more negative superstitious beliefs than male Ghanaian student athletes.

A 2 by 2 analysis of covariance was conducted to assess the main and interactive effects of gender and nationality on superstitious behaviour. Age was entered as a covariate to control for individual difference.

Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity or homogeneity of regression slope, but there was violation of the assumption of homogeneity of variances. After controlling for age, a statistically non-significant main effect was observed for gender:  $F(1, 356) = 1.97$ ,  $p = .16$ ,  $\eta^2 = 0.01$ ); however, the main effect was statistically significant for nationality:  $F(1, 356) = 62.2$ ,  $p < .05$ ,  $\eta^2 = 0.15$ . These results suggest that males and females do not differ in their engagement with superstitious behaviour. However, the present results suggest Ghanaian student athletes ( $M = 59.44$ ,  $SD = 47.93$ ) are more likely to engage in superstitious behaviour than British student athletes ( $M = 24.95$ ,  $SD = 19.70$ ). There was no significant interaction effect for gender and nationality:  $F(1, 356) = 1.77$ ,  $p = .19$ ,  $\eta^2 = 0.01$ ).



It was hypothesised that there will be a significant relationship between superstitious belief types and superstitious behaviour. There was no significant relationship between superstitious belief types and superstitious behaviour, but there was a significant positive correlation ( $p < .01$ ) between positive superstitious beliefs and negative superstitious beliefs (0.71), as presented in Table 3.

In addition, Pearson correlation coefficients were obtained among sub-measures of superstitious behaviour and superstitious belief types. There was no significant relationship between team rituals and superstitious belief types. There was also no significant relationship between clothing and appearance, lucky items and pre-game rituals and superstitious beliefs types. A significant negative correlation ( $p < .05$ ) between game rituals and positive superstitious beliefs type (-0.11) was found. A significant negative correlation ( $p < .01$ ) between positive superstitious beliefs and prayer emerged (-0.346). Also, a significant negative correlation between negative superstitious beliefs and prayer (-0.292) was recorded. A significant negative correlation existed between positive superstitious beliefs and coach (-0.186) and between negative superstitious beliefs and coach (-0.14).

*Table 3: Summary of correlations between subscales of superstitious behaviour and superstitious belief types.*

Independent variables	Negative superstitious beliefs	Positive superstitious beliefs
Superstitious behaviour	-.046	-.063
Clothing	-.012	-0.11
Lucky	-.043	.084
Pre-game	.054	.044
Game	-.064	-.110*
Team rituals	.073	.042
Prayer	-.292**	-.346**
Coach	-.140**	-.186**

## Discussion

A 2 (gender: male, female) by 2 (nationality: British, Ghanaian) analysis of covariance was used to determine the main and interactive effects of gender and nationality on positive superstitious beliefs, negative superstitious beliefs and superstitious behaviours. Females engaged in more positive and negative superstitious behaviours than males. Also, British student athletes engaged in more positive and negative superstitious beliefs than their Ghanaian counterparts. Both main effects for positive and negative superstitious beliefs had significant interactive effects. The present results suggest Ghanaian student athletes are more likely to engage in superstitious behaviour than British student athletes. There was no significant interaction effect for gender and nationality on superstitious behaviour. There was no association between superstitious belief types and superstitious behaviour, but there was a significant positive correlation between positive superstitious beliefs and negative superstitious beliefs.

Differences in superstitious behaviour and belief types were examined for gender. It was hypothesised that there would be a significant main effect for gender on superstitious behaviour. Overall, no significant difference was found between males and females, and this result supports past findings that reported no significant differences in overall usage of superstitious rituals between male and female athletes (Buhrmann, Brown, & Zaugg, 1982; Neil, Anderson, & Sheppard, 1981). Previous research has shown there were differences in specific rituals used by each gender. The current findings contradict Scheidt's (1973) findings that females are more favourable toward supernatural attitudes than males, though he used a small sample.

One major limitation in the superstition in sports literature is that researchers attempt to measure only negative superstitious beliefs. This observation informs one of the purposes of this study: to address this measurement gap in the area of superstition in general, and in sports in particular, by using scales that measure positive and negative superstitious behaviour and beliefs in sport. Gender differences emerged, with females from both countries tending to show higher levels of both positive and negative superstitious beliefs than males. This finding confirms past research (Wiseman & Watt, 2004; Vyse, 1997) that reports that women are more likely to believe in superstitions than men. It can be suggested that women place more importance on sporting contests and evaluate them as high-risk and uncertain ventures. Hence, female athletes are more likely to believe in superstitious beliefs than male athletes across cultures.

The present dataset found the same significant patterns as revealed by Wiseman and Watt (2004) that women tended to endorse both types of superstition to a greater extent than men. British female student athletes engage in both positive and negative superstitious belief more than their male counterparts, and both male and female Ghanaian student athletes. Within the same country, females showed more involvement in superstitious beliefs than their male counterparts. The present study was also consistent with Lewis and Gallagher (2001), who reported that female students were more likely to prefer not to take a test on Friday the 13th. It can also be suggested that the sometimes disadvantaged status of women may partially explain why they are more likely than men to report superstitious beliefs. This assertion was confirmed by Wuthnow (1976), who reported that belief in astrology is stronger in people who are unable to work or who are looking for a job.

However, this study contradicts Emmons and Sobal's (1981) finding that the correlation between astrological belief and unemployment was not significant. The present findings are nevertheless consistent with the social marginality hypothesis. According to Bainbridge (1978) and Wuthnow (1976), people most susceptible to paranormal belief are members of socially marginal groups, that is, groups such as the poorly educated or the unemployed, which possess characteristics or roles that rank low among dominant social values. The present study certainly confirms the best established finding in the psychology of superstition – that women show more evidence of superstitiousness than men (Plug, 1976).

However, British males engaged in both positive and negative superstitious beliefs more than Ghanaian males and females. This may be explained by the cultural interpretation given to the superstitions within a particular social setting. Again, the different level of superstitiousness across gender is essentially a product of more basic differences in attitudes to science and religion. Thus, males have been socialised to take more interest in, and be better informed about, scientific matters than about religious issues, where female children's education is minimal. Although the trend is changing, females are generally trained towards domestic duties like child rearing and managing the household and the family. The deprivation and alienation associated with marginal status in society is held to encourage such people to appeal to superstitious beliefs, presumably because these beliefs bring various compensations to the lives of their adherents.

One of the purposes of this study was to examine the relationship between superstitious behavior and superstitious belief types among students from the United Kingdom and

Ghana. Male British student athletes displayed more positive and negative superstitious beliefs than male Ghanaian student athletes. This cross-cultural difference was most marked for groups of items related to traditional African religious concepts and to spiritualist phenomena, although differences were also evident for individual items widely considered as superstition. In Africa, elite athletes (mostly men) openly demonstrate their pre-game rituals (Ofori et al., 2012). African children learn about juju from a very young age, as they see players of well-known teams engaging in these superstitious rituals on the pitch, either live or on television, and immediately want to copy what they have observed. Hence, there is high possibility of learning by observation from these elite athletes.

Ghanaian students scored significantly higher than British students regarding superstitious behaviour. This study partially replicates Burke et al.'s (2006) findings that African-American athletes scored significantly higher than Caucasian athletes regarding usage of prayer. The difference between this study and earlier research, such as Burke et al. (2006), lies in the fact that unlike the latter study, where the participants were African-Americans who had lost their cultural values as Africans, the current study recruited African students resident in Ghana. Since the socialisation process can influence people's perceptions and personality traits, which are key determinants of superstition, an individual's environment can influence their beliefs systems. On this basis it can be suggested that a person's worldview can be a determining factor in engaging in superstitious behaviour.

However, British students (male and females) tended to believe in both positive and negative superstition to a greater extent than Ghanaian students (male and females). A possible explanation for this reverse trend in terms of superstitious beliefs lies in the fact that Ghanaians are more religious and may be more like to evaluate some of the items on the scale as fetishes than British students, who live in a more secular society. This result can be explained by cultural understanding of some of the items on the scale and social belief surrounding them. Again, the British may believe in superstition (positive or negative) but may not actually perpetuate their thoughts, while a Ghanaian may not consider superstitions cognitively but rather act on them. Another major reason may be that in an African context, superstitions have direct magical connotations that include rituals often recommended by mallams, traditional priest and prophets. The scale used in measuring superstitious beliefs was more about superstitions common in Western cultures. This was evident in the present study, where both male and female British students engaged in more positive and negative superstitious beliefs than their Ghanaian counterparts. To the extent that British male students reported more positive and negative superstitious beliefs than Ghanaian females. These interactions clearly support the assumption that superstition is a function of culture.

One of the purposes of this study was to examine the relationship between superstitious behavior and superstitious belief types. Superstitious behavior did not seem to be significantly associated with superstitious belief types. This is an indication that people who may conceive of superstitious thoughts may not necessarily perpetuate them. Hence, there is the need for researchers to distinguish athletes' superstitious beliefs from their superstitious behaviours.

Further research is necessary in using an established theory of anxiety in explaining the relationship between superstitious behaviour and beliefs and the measures of personal control, control strategies, coping and learned helplessness. Future research should examine how these psychological attributes predict positive and negative superstitious belief types and superstitious behaviours. It is suggested that individual personal beliefs, as well as particular sport environments, are stronger predictors of superstitious application.

The result shows the need to use a clear measurement scale for superstitious beliefs and behaviour, as the same sample perception in different contexts varies. To the extent that some researchers have actually defined traditional religious concepts like prayers as superstitious behaviour, it may seem somewhat redundant to inquire whether superstitious behaviour is associated with religious behaviour and superstitious beliefs. Although peculiar beliefs are generally considered a universal aspect of athletes' thinking, there are many examples of superstitious beliefs and superstitious behaviour whose particular expressions are culture-bound.

Superstitious beliefs can have implications for athletes' behaviour in relation to psychical matters and their psychological readiness before competitions; it is therefore legitimate for sport scientist to consider whether these attitudinal aspects of superstitious beliefs extend to other domains of the athlete's behaviour and career as a whole. The present study has identified demographic correlates; therefore, it is necessary to examine the relationship between psychological constructs such as coping, helplessness, personal control and superstition. These variables have been used by past researchers to explain superstition, hence the need to take them into account in the formulation of an effective theory to



explain why athletes engage in superstitious behaviour. The subsequent studies will seek to achieve this goal.

## CHAPTER 4: STUDY 2

*Superstition arises as a symbolic means of handling important environmental influences which are not subject to empirical control, and also for dealing with the anxiety, frustration, or threat which may result when people are confronted with important environmental forces which they cannot master.*

—Theodore Rosenthal and Bernard Siegel, *“Magic and Witchcraft: An Interpretation from Dissonance Theory”*

The previous study has shown that gender and nationality differences exist in terms of superstitious beliefs. Superstitious behaviours were more prevalent among Ghanaian student athletes than their British counterparts. It contradicted the previously held claims that superstitious thinking is mainly ubiquitous among primitive tribes (Frazer, 1890/1959), young children (Freud, 1919/1959; Piaget, 1929) and elite athletes (Schippers & Van Lange, 2006). However, studies have indicated that exposure to conditions of stress or danger (Kienan, 1994), uncertainty and uncontrollable conditions (Malinowski, 1948), and anxiety, frustration or threat (Rosenthal and Siegel, 1959) create an enabling environment for superstitions to thrive.

The present study aimed to examine superstitions in sports with an established theory of control (control strategies by Rothbaum et al., 1982). Specifically, inspired by studies on superstitious responses to stress as a means of coping with uncertain and uncontrollable conditions (Malinowski, 1948), regulating psychological tension and creating a feeling of control and a sense of predictability in otherwise messy environments (Keinan, 2002), the present study sought to establish if primary and secondary control relate to coping constructs (emotional focus coping, religious coping and problem focus coping). Superstitious rituals increase performers' sense of control, which reduces anxiety and

allows individuals to cope with their unpredictable conditions and successfully perform the high-risk tasks they face (Burger & Lynn, 2005).

As a result of the fundamental value of control, people may attempt to sustain the feeling of control, even when they recognise that actual control is limited or non-existent. The current study examined the relationships between superstitious behaviour, superstitious beliefs (positive and negative) and learned helplessness, personal control, coping measures and primary and secondary control. The three types of control strategies were based on Wrosch, Heckhausen, and Lachman's (2000) classification of control strategies that prototypically represent persistence in goal striving (primary control), positive reappraisals (secondary control) and lowering aspirations (secondary control). Another purpose of the study was to examine whether measures of personal control, control strategies and coping predict superstitious belief types (negative and positive) and superstitious behaviour.

Research in the field has been equivocal regarding personal control with superstitious behaviours among student athletes (Groth-Marnat & Pegden, 1998; Peterson, 1978; Todd & Brown, 2003; Van Raalte et al., 1991, Burke, Czech, Knight, Scott, Joyner, Benton & Roughton, 2006), but no study has incorporated all of the variables of interest in a single academic study; thus, this investigation hopes to further clarify these relationships. This study sets out to fill the gap in empirical evidence by exploring the possible relationships among personal control, primary and secondary control, helplessness and coping with superstitious behaviours. A secondary purpose of this study was to investigate specifically which of the variables listed above predicted superstitious behaviours and beliefs. The present study was interested in assessing what the relationship of each independent to each dependent variable and also which independent variable (demographic data, coping and

control variables) predict each of the dependent variable (positive superstitious beliefs, negative superstitious beliefs and superstitious behaviour) at each entry point; hence, hierarchical multiple regressions will be used in analysing the data. The present study set out to evaluate what each independent variable adds to the prediction of the dependent variable, which is different from the predictability afforded by all the other independent variables. More so, hierarchical multiple regressions allow the researcher to control the advancement of the regression process (Tabachnick & Fidell, 2007).

**Research Questions:**

Is there a relationship between measures of control strategies, coping, personal control, learned helplessness and superstitious beliefs and behaviour?

Which of these psychological constructs are more likely to predict superstitious beliefs and behaviour?

**Hypotheses:**

Hypothesis 1: It was hypothesised that superstitious belief types (positive and negative) and superstitious behaviours will be significantly related to different coping strategies, personal control and learned helplessness.

Hypothesis 2: It was hypothesised that measures of personal control and coping strategies would predict superstitious behaviour.

Hypothesis 3: It was hypothesised that measures of personal control, secondary control and coping strategies would predict negative superstitious beliefs.

Hypothesis 4: It was hypothesised that measures of personal control, secondary control and coping strategies would predict positive superstitious beliefs.

## **Methods**

The participants, procedure and design of this study are described in the previous study (pages 72-77). This is done to reduce the total word count of the whole thesis.

## Data Analysis

Multiple regression was employed to determine if addition information regarding personal control and then coping mechanisms improved the prediction of superstitious behaviours. Analysis was performed using SPSS REGRESSION and SPSS FREQUENCIES for evaluation of assumptions. Hierarchical multiple regressions were used because the present study was theoretically driven and sought to control for the demographic variables and establish a distinct contribution of control and coping variables at step 1, step 2 and step 3, respectively, in the analysis. Personal control variables were entered first because of the greater theoretical importance of control in superstition research. Theories of control are the most used concept in explaining superstitious beliefs and behaviour. For instance, personal control variables presumed to be causally prior were given higher priority of entry because their constructs are made of two of the main correlates of superstition: religiosity and locus of control. In addition, several researchers have found a link between holding superstitious beliefs and a need to cope with life's uncontrollability (Edis, 2000; Hughes, 2002; Irwin, 1994).

Results of evaluation of assumptions led to transformation of the variables to reduce skewness, reduce the number of outliers, and improve the normality, linearity and homoscedasticity of residuals. With the use of a  $p < .001$  criterion for Mahalanobis distance, no outliers were found.

Pearson correlation was used to establish the relationship between the variables under study. Hierarchical multiple regressions were used to determine if the addition of any of the measures of personal control, control strategies and coping improved the prediction of

criterion variables (positive superstitious beliefs, negative superstitious beliefs and superstitious behaviour) under investigation. Age, gender and ethnicity were controlled in the regression analysis.



## Results

### Hypothesis 1:

It was hypothesised that superstitious belief types (positive and negative) and superstitious behaviour are related to different coping strategies, personal control and learned helplessness.

Pearson correlation coefficients were obtained among measures of belief in personal control, coping, learned helplessness and superstitious belief types and superstitious behaviour (see Table 4). Significant positive correlations ( $p < .05$ ) emerged between positive superstitious beliefs and self-distraction (.125), substance use (.345), emotional support (.223), humour (.167), self-blame (.277), general external control (.171), God-mediated control (.43) and secondary control 2 (.199), while significant negative correlations emerged between positive superstitious beliefs and active coping (-.123), planning (-.149), acceptance (-.159), religion (-.406), exaggerated internal control (-.131) and secondary control (-.225). Significant positive correlations were found between negative superstitious beliefs and substance use (.297), emotional support (.189), behaviour disengagement (.12), self-blame (.205), general external control (.171), God-mediated control (.342) and secondary control 2 (.21), while significant negative correlations were found between negative superstitious beliefs and positive reframing (-.108), planning (-.160), religion (-.35), exaggerated internal control and secondary control 1 (-.152). Significant positive correlations ( $p < .01$ ) existed between superstitious behaviour and denial (.297), behaviour disengagement (.296), venting (.211) and religion (.335), while significant negative relationships existed between superstitious behaviour and humour (-.122), self-blame (-.155), God-mediated control (-.375) and exaggerated internal control (-.264).

A significant negative correlation emerged ( $p < .01$ ) between secondary control 1 (positive reappraisals) and negative superstitious beliefs (-.152) and positive superstitious beliefs (-.225), while a significant positive correlation emerged between secondary control 2 (lowering aspirations) and negative superstitious beliefs (.210) and positive superstitious beliefs (.199).

*Table 4: Summary of correlations between measures of belief in personal control, coping and learned helplessness, and superstitious belief types and superstitious behaviour*

Independent Variables	Negative Superstitious Beliefs	Positive Superstitious Beliefs	Superstitious Behaviour
Self-distraction	.046	.125*	-.054
Active coping	-.075	-.123*	.042
Denial	-.012	-.035	.297**
Substance use	.297**	.345**	.034
Emotional support	.189**	.223**	-.007
Instrumental support	.066	.074	.056
Behavioural disengagement	.120*	.039	.296**
Venting	-.064	-.064	.211**
Positive reframing	-.108*	-.090	.081
Planning	-.160**	-.149**	.041
Humour	.081	.167**	-.122*
Acceptance	-.096	-.159**	.068
Religion	-.350**	-.406**	.335**
Self-blame	.205**	.277**	-.155**
General external control	.171**	.171**	-.058
God-mediated control	.342**	.430**	-.375**
Exaggerated internal control	-.191**	-.131*	-.264**
Learned helplessness	.074	.057	.098
Primary Control	-.064	-.064	-.014
Secondary control 1	-.152**	-.225**	.067
Secondary control 2	.210**	.199**	.091

\*\* Correlation is significant at .01 level

\*Correlation is significant at .05 level

*Table 5: Summary of means and standard deviation for predictor and criterion variables*

	N	Mean	Standard Deviation	Cronbach's Alpha
Social desirability (MCSDS)	366	6.63	2.55	.56
Self-distraction (COPE)	361	5.41	1.31	.62
Active coping (COPE)	363	5.81	1.18	.62
Denial (COPE)	363	3.69	1.34	.62
Substance use (COPE)	363	2.8	1.3	.67
Emotional support (COPE)	361	4.84	1.39	.60
Instrumental support (COPE)	361	5.23	1.44	.60
Behavioural disengagement (COPE)	361	3.29	1.2	.65
Venting (COPE)	361	4.76	1.25	.62
Positive reframing (COPE)	360	4.76	1.25	.60
Planning (COPE)	361	5.69	1.26	.61
Humour (COPE)	361	4.87	1.62	.64
Acceptance (COPE)	361	5.28	1.21	.61
Religion (COPE)	361	4.49	2.3	.66
Self-blame (COPE)	361	4.82	1.54	.63
General external control (BPCS)	356	41.98	7.48	.23
Exagginternal control (BPCS)	356	66.08	9.6	.23
God-mediated control (BPCS)	356	26.8	14.16	-.04
Superstitious Behaviour (SRQ)	362	42.24	40.77	.87
Negative Superstitious Beliefs (BSQ)	370	6.71	2.99	.83
Positive Superstitious Beliefs (BSQ)	370	7.61	2.93	.83
Age	375	22.71	4.38	
Valid N (listwise)	349			

## **Sequential Regression**

### **Hypothesis 2**

It was hypothesised that measures of personal control and coping strategies would predict superstitious behaviour.

Sequential regression was employed to determine if the addition of information regarding personal control measures (exaggerated internal control, God-mediated control) and then coping mechanism measures (behaviour disengagement, venting, self-blame, humour and denial) improved the prediction of superstitious behaviour after controlling for the influence of social desirability, age and ethnicity. To avoid multicollinearity, religion was not included in the regression analysis since it measured the same psychological attribute as God-mediated control ( $r = -.87$ ). There was no problem with multicollinearity. This is because the predictor variables has variance inflation factor (VIF) values that were less than 10 as asserted by Myers (1990). Menard (1995) suggested that tolerance statistic values should not be below .2; in the present data's collinearity statistics for the predictor variables were all above .02.

The results of the sequential regression analyses predicting superstitious behaviour are shown in Table 6. Age, social desirability, gender and ethnicity were entered at Step 1, explaining 19% of the variance in superstitious behaviour. After entry of the exaggerated internal control and God-mediated control at Step 2, the model explained 24% of the variance,  $F(6,326) = 17.47, p < .001$ . The two control measures explained an additional 5% of the variance in superstitious behaviour, after controlling for age, gender and socially desirable responding,  $R^2 \text{ change} = .05, F \text{ change}(2,326) = 10.66, p < .001$ . Entry of the coping mechanism measures at Step 3 explained 30% of the variance,  $F(11,321) =$

12.43,  $p < .001$ . The four control measures and personal control measures explained an additional 6% of the variance in superstitious behaviour, after controlling for age, gender and socially desirable responding and adding personal control,  $R$  square change = .06,  $F$  change (5,321) = 5.07,  $p < .001$ . In the final model, five control measures were statistically significant, with ethnicity recording a higher beta value (beta = .2,  $p < .05$ ) than venting (beta = .11,  $p < .05$ ).

*Table 6: Sequential Regression Analyses Predicting Superstitious Behaviour from Coping and Personal Control Measures*

Predictor	B	SE B	$\beta$	$\Delta R^2$
Step 1				
			.19***	
Constant	5.32	12.93		
Age	0.83	0.51	.09	
Gender	5.29	4.08	.07	
Ethnicity	5.09	0.69	.4***	
Social desirability	-1.92	0.79	-.12*	
Step 2				
				.05***
Constant	78.65	20.63		
Age	0.77	0.50	.08	
Gender	4.42	3.97	.05	
Ethnicity	3.81	1.05	.30***	
Social desirability	-1.56	0.78	-.10	
Exagg Internal control	-0.90	0.21	-.21***	
God-Med. Control	-0.28	0.22	-.10	
Step 3				
			.06***	
Constant	47.95	26.23		
Age	0.66	0.49	.07	
Gender	2.42	3.91	.03	
Ethnicity	2.53	1.11	.20*	
Social desirability	-1.25	0.77	-.08	
Exagg Internal control	-0.69	0.23	-.16**	
God-Med. Control	-0.24	0.23	-.09	
Denial	2.26	1.71	.08	
Behavioural disengagement	5.52	1.75	.17**	
Venting	3.65	1.63	.11*	
Humour	0.76	1.29	.03	
Self-blame	-4.80	1.38	-.18**	

Note: \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

The results of the regression analyses predicting superstitious behaviour are shown in Table 6. As may be seen, personal control and coping mechanism were significant predictors of superstitious behaviour. It is reported here the effects of exaggerated internal control, behaviour disengagement, venting and self-blame on superstitious behaviour within personal control and coping mechanisms were significant predictors. Inspection of table 6 reveals that when God- Mediated Control and Exaggerated internal control are controlled, venting was significant positive predictor of superstitious behaviour, ( $\beta=.11$ ,  $p<.05$ ), behaviour disengagement was significant positive predictor of superstitious behaviour, ( $\beta=.17$ ,  $p<.01$ ) and self-blame was significant negative predictor of superstitious behaviour, ( $\beta=-.18$ ,  $p<.01$ ). Statistical comparisons using tests of related betas (Cohen & Cohen, 1983) confirmed that self-blame from coping mechanism made the highest significant contribution, while exaggerated internal control was the only personal control measure that made a significant contribution to the superstitious behaviour. Thus, those perceived to have adopted exaggerated internal control as means of control are more likely to engage in superstitious behaviour than those who adopt God-mediated control and General external control. In the same vein, those who adopted any of these coping mechanisms; behaviour disengagement, venting, and self-blame, are more likely to engage in superstitious behaviour.



### **Hypothesis 3**

It was hypothesised that measures of secondary control, personal control and coping strategies would predict negative superstitious beliefs.

Relationships among secondary control measures (positive reappraisals and lowering aspirations), personal control measures (general external control, God-mediated control and exaggerated internal control) and coping measures (substance use, emotional support, behavioral disengagement, positive reframing, planning and self-blame) were examined using a series of sequential multiple regression.

The results of the measures of secondary control, personal control and coping strategies predicting negative superstitious beliefs, after controlling for age, social desirability, gender and ethnicity, are shown in Table 7. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. Age, social desirability, gender and ethnicity were entered at Step 1, explaining 18.3% of the variance in negative superstitious beliefs. After entry of the measures of secondary control at Step 2, the total variance explained by the model as a whole was 22%,  $F(6, 344) = 16.28, p < .001$ . The two secondary control measures explained an additional 4% of the variance in negative superstitious beliefs, after controlling for age, social desirability, gender and ethnicity,  $R^2 \text{ change} = .04, F \text{ change}(2, 344) = 8.41, p < .001$ . After entry of the measures of personal control at Step 3, the total variance explained by the model as a whole was 28%,  $F(9, 341) = 14.46, p < .001$ . The three personal control measures explained an additional 6% of the variance in negative superstitious beliefs, after controlling for age, social desirability, gender, ethnicity, positive

reappraisals and lowering aspirations,  $R$  squared change = .06,  $F$  change (3,341) = 8.63,  $p < .001$ . In Step 4, the coping mechanism measures were entered, and the total variance explained by the model as a whole was 31%,  $F$  (15, 335) = 10.15,  $p < .001$ . The six coping mechanism measures explained an additional 4% of the variance in negative superstitious beliefs, after controlling for age, social desirability, gender, ethnicity, positive reappraisals, lowering aspirations, general external control, God-mediated control and exaggerated internal control,  $R$  squared change = .04,  $F$  change (6,335) = 2.94,  $p < .05$ .

In the final model, two measures of personal control were statistically significant, with exaggerated internal control recording a higher beta value (beta = -.17,  $p < .05$ ) than God-mediated control (beta = .16,  $p < .05$ ). Only two measures of the coping mechanisms were statistically significant, with emotional support recording a higher beta value (beta = .13,  $p < .05$ ) than substance use (beta = .12,  $p < .05$ ).

*Table 7: Sequential Regression Analyses Predicting Negative Superstitious Beliefs from Secondary Control, Coping Mechanisms and Personal Control Measures*

<b>Predictor</b>	<b>B</b>	<b>SE B</b>	<b><math>\beta</math></b>	<b><math>\Delta R^2</math></b>
<b>Step 1</b>				.18***
Constant	10.55	.92		
Age	.04	.04	.05	
Gender	-1.40	.30	-.23***	
Ethnicity	-.31	.05	-.36***	
Social desirability	-.16	.06	-.14*	
<b>Step 2</b>				.04***
Constant	9.53	1.22		
Age	.03	.04	.04	
Gender	-1.39	.29	-.23***	
Ethnicity	-.30	.05	-.34***	
Social desirability	-.12	.06	-.1*	
Positive reappraisals	-.10	.07	-.08	
Lowering aspirations	.22	.06	.18***	
<b>Step 3</b>				.06***
Constant	11.68	1.94		
Age	.03	.03	.04	
Gender	-1.42	.29	-.24***	
Ethnicity	-.22	.06	-.25***	
Social desirability	-.08	.06	-.07	
Positive reappraisals	-.04	.07	-.03	
Lowering aspirations	.14	.06	.12*	
General external control	.02	.02	.04	
God-mediated control	.04	.02	.18*	
Exaggerated internal control	-.07	.02	-.22***	
<b>Step 4</b>				.04*

Constant	9.28	2.26	
Age	.04	.03	.06
Gender	-1.35	.28	-.22***
Ethnicity	-.21	.06	-.24**
Social desirability	-.07	.06	-.06
Positive appraisal	-.01	.08	-.01
Lowering aspirations	.08	.06	.06
General external control	.01	.02	.01
God-mediated control	.03	.02	.16*
Exaggerated internal control	-.05	.02	-.17**
Substance use	.27	.12	.12*
Emotional support	.27	.11	.13*
Behavioural disengagement	.17	.13	.07
Positive reframing	-.14	.13	-.06
Planning	-.05	.13	-.02
Self- blame	.05	.10	.03

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Note: \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

As can be seen in Table 7, at each step of the sequential regression, the predictor made a significant contribution to negative superstitious beliefs. As may be seen, lowering aspirations (LA) but not positive reappraisals (PR), was a significant predictor of negative superstitious beliefs. When LA and PR were controlled, God-mediated control and exaggerated internal control were significant predictors of negative superstitious beliefs. In the final stage, after measures of secondary control strategies and personal control were controlled, substance use and emotional support as coping mechanism measures predicted negative superstitious beliefs. These results supported the research hypotheses that secondary control strategies, personal control and coping mechanism predicted negative superstitious beliefs.

#### **Hypothesis 4**

It was hypothesised that measures of secondary control, personal control and coping strategies would predict positive superstitious beliefs.

Relationships among secondary control measures (positive reappraisals and lowering aspirations), personal control measures (general external control, God-mediated control and exaggerated internal control) and coping measures (self-distraction, active coping, substance use, emotional support, planning, humour, acceptance and self-blame) were examined using a series of sequential multiple regressions.

The results of the measures of secondary control, personal control and coping strategies after controlling age, social desirability, gender and ethnicity would predict positive superstitious beliefs, are shown in Table 8. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. Age, social desirability, gender and ethnicity were entered at Step 1, explaining 27.3% of the variance in positive superstitious beliefs. After entry of the measures of secondary control at Step 2, the total variance explained by the model as a whole was 32%,  $F(6, 344) = 27, p < .001$ . The two secondary control measures explained an additional 5% of the variance in positive superstitious beliefs, after controlling for age, social desirability, gender and ethnicity,  $R^2 \text{ change} = .05, F \text{ change}(2, 344) = 12, p < .001$ . After entry of the measures of personal control at Step 3, the total variance explained by the model as a whole was 36.4%,  $F(9, 341) = 21.67, p < .001$ . The three personal control measures explained an additional 4% of the variance in positive superstitious beliefs, after controlling for age, social desirability, gender, ethnicity, positive

reappraisals and lowering aspirations,  $R$  squared change = .04,  $F$  change (3,341) = 7.81,  $p < .001$ . In Step 4, the coping mechanism measures were entered, and the total variance explained by the model as a whole was 43%,  $F$  (17, 333) = 14.93,  $p < .001$ . The eight coping mechanism measures explained an additional 7% of the variance in positive superstitious beliefs, after controlling for age, social desirability, gender, ethnicity, positive reappraisals, lowering aspirations, general external control, God-mediated control and exaggerated internal control,  $R$  squared change = .07,  $F$  change (8,333) = 5.03,  $p < .001$ .

In the final model, only positive reappraisal as a measure of secondary control was statistically significant. The two measures of personal control were statistically significant, with God-mediated control (beta = .18,  $p < .05$ ) recording a higher beta value and exaggerated internal control recording a lower beta value (beta = -.13,  $p < .05$ ). Only three coping mechanism measures were statistically significant, with substance use recording a higher beta value (beta = .15,  $p < .05$ ) than emotional support (beta = .14,  $p < .05$ ) and acceptance (beta = -.14,  $p < .05$ ).

*Table 8: Sequential Regression Analyses Predicting Positive Superstitious Beliefs from Secondary Control, Coping Mechanisms and Personal Control Measures*

<b>Predictor</b>	<b>B</b>	<b>SE B</b>	<b><math>\beta</math></b>	<b><math>\Delta R^2</math></b>
<b>Step 1</b>				<b>.27***</b>
Constant	12.76	.85	.00	
Age	.00	.03	.00	
Gender	-1.64	.28	-.28***	
Ethnicity	-.37	.04	-.44***	
Social desirability	-.15	.05	-.13*	
<b>Step 2</b>				<b>.05***</b>
Constant	12.59	1.12		
Age	0	.03	-.01	
Gender	-1.6	.27	-.27***	
Ethnicity	-.36	.04	-.42***	
Social desirability	-.10	.05	-.09	
Positive reappraisals	-.18	.06	-.14**	
Lowering aspirations	.20	.05	.17***	
<b>Step 3</b>				<b>.04***</b>
Constant	14.23	1.78		
Age	8.2	.03	.00	
Gender	-1.65	.26	-.28***	
Ethnicity	-.25	.06	-.29***	
Social desirability	-.07	.05	-.06	
Positive reappraisals	-.15	.07	-.11*	
Lowering aspirations	.15	.06	.13*	
General external control	.0	.02	-.01	
God-mediated control	.05	.01	.23**	
Exaggerated internal control	-.05	.01	-.17***	
<b>Step 4</b>				<b>.07***</b>
Constant	10.23	2.06		



Age	.02	.03	.03
Gender	-1.48	.26	-.25***
Ethnicity	-.21	.05	-.25***
Social desirability	-.07	.05	-.05
Positive appraisal	-.14	.07	-.11*
Lowering aspirations	-.07	.06	.06
General external control	.01	.02	.02
God-mediated control	.04	.01	.18*
Exaggerated internal control	-.04	.01	-.13*
Self-distraction	.12	.10	.05
Active coping	.20	.13	.08
Substance use	.33	.10	.15**
Emotional support	.29	.10	.14**
Planning	-.05	.13	-.02
Humour	.03	.09	.02
Acceptance	-.34	.11	-.14**
Self-blame	.17	.09	.09

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

Table 8 shows that at each step of the sequential regression, the predictor made a significant contribution to positive superstitious beliefs. As may be seen, lowering aspirations (LA), but not positive reappraisals (PR) was a significant predictor of positive superstitious beliefs. When LA and PR were controlled, God-mediated control and exaggerated internal control were significant predictors of positive superstitious beliefs. In the final stage, after measures of secondary control strategies and personal control were controlled, substance use, emotional support and acceptance as coping mechanism measures predicted positive superstitious beliefs. These results supported the research hypotheses that secondary control strategies, personal control and coping mechanisms predicted positive superstitious beliefs.

## Discussion

The present study sought to draw upon an established theory of control to investigate the relationships between personal control, learned helplessness, control strategies and superstitious beliefs and behaviour. Contrary to other research indicating that learned helplessness has a relationship with superstition (Matute, 1994), the present study found no significant correlation between learned helplessness and superstitious belief types and superstitious behaviour. This may be due to the context under which the present study was undertaken.

There were significant relationships between some of the measures of personal control, control strategies and coping mechanisms and superstitious behaviour and beliefs. Personal control and coping mechanisms were significant predictors of superstitious behaviour. Lowering aspirations (LA), God-mediated control and exaggerated internal control, substance use and emotional support were significant predictors of negative superstitious beliefs. However, positive reappraisals, lowering aspirations, God-mediated control, exaggerated internal control, substance use, emotional support and acceptance were significant predictors of positive superstitious belief.

No relationship was found between superstitious belief types, superstitious behaviour and learned helplessness. This finding does not support Matute's (1994) assertion that helplessness undermines the individual's sense of control, leading to maladaptive behaviour or superstitious beliefs. This finding suggests that the maladaptive nature of superstitions, which has often been suggested (Alcock, 1981; Dag, 1999), may not

necessarily be the reality or universal truth in all spheres of life. Rather, some researchers have begun to re-evaluate the functions of superstitious beliefs and behaviour, and argue that superstitions may just as well be adaptive (Becker, 1975; Keinan, 2002; Neil, 1980, 1982; Rudski, 2001; Rudski & Edwards, 2007; Vyse, 1997; Wiseman, 2004). This perspective seems plausible if one examines the groups of people who are traditionally superstitious (Vyse, 1997), which includes the participants of this study.

A significant correlation was found between a belief in God-mediated control (indicated by higher scores on the BPCS) and overall usage of superstitious behaviour and both positive and negative superstitious beliefs. The present study confirms Burke et al.'s (2006) findings that athletes who believed less in God-mediated control utilised fewer superstitious practices. They explained their findings by suggesting that a lesser indicated belief in God-mediated control also indicated fewer prayer-related rituals. Logically, prayer should not influence a lesser indicated belief in God-mediated control, since prayer serves a positive function of either preventing a misfortune or bringing good luck. However, the present study also confirms Burhmann and Zaugg's (1983) findings that superstitious beliefs and practices were directly correlated with church attendance. Significant positive relation was established between religion and superstitious behaviour. This could be explained by the measuring scale of superstitious behaviour that classifies some religious rites, like prayer, as superstitions. This supports the call for clearer distinction between what constitute religious rituals and superstitious rituals.

A significant correlation was found between exaggerated internal control and superstitious belief types and behaviour. These findings are consistent with Wiseman and Watt's (2004) findings that psychological correlates of superstitious belief vary depending on whether the

belief is in positive or negative superstitions. Judging from the items that constitute positive superstition, such as “carrying a charm to bring good luck”, and that of negative superstition scale such as “breaking a mirror”, it can be deduced that the definition that is magically given to a belief determines its consequence as either functional or harmful to the believer. Given the examples above, it was not surprising that Wiseman et al. found scores on a negative superstition sub-scale correlated with a range of measures reflecting poor psychological adjustment. Hence, the present findings suggest the need for any reliable and valid measure of superstitious belief to take into consideration both positive and negative superstitions.

The present finding contradicts Groth-Marnat and Pegden’s (1998) findings in a study of undergraduate students that an internal locus of control was related to stronger beliefs in superstitions. However, it supports Tobacyk, Nagot and Miller’s (1988) findings that greater personal efficacy and greater interpersonal control correspond with less belief in superstition. This is an indication that athletes who have exaggerated belief about their abilities are less likely to endorse superstitious practices. This is possibly because their perception of control is not under threat. There was a significant relation between general external control and superstitious belief types.

Further, there was no relationship between primary control and superstitious beliefs (negative and positive) and behaviour. However, our research hypothesis was confirmed, with a significant relationship existing between superstitious beliefs and secondary control (positive reappraisals and lowering aspirations). The more a person uses positive reappraisals, the less he/she believes in superstitions. On the other hand, the more a student lowers his/her aspirations, the greater their belief in superstitions. This finding is in

agreement with Rothbaum et al.'s (1982) account of secondary control; participants appeared to align themselves with the forces of magic in an attempt to gain control. This suggests that the process which is served by the use of superstitious strategy is secondary (lowering of aspirations). So in their quest to adapt to the realities on the ground, individuals align themselves with luck as a means of regaining control. Aligning oneself with luck may influence an individual's demand appraisal of the situation, which may increase their self-efficacy (Damisch, Stoberock, & Mussweiler, 2010) and perceived control.

In particular, the results suggest that people may enact their positive superstitious beliefs and religion as a coping mechanism and as a secondary control strategy, to give themselves the comfort of feeling in control under conditions of impending failure. Accordingly, positive superstitious beliefs might have resulted from the person enacting a positive reappraisal of the situation. It can be deduced from the present findings that people are likely to engage in positive superstitions only when skill or actual ability to control outcomes (primary control) is low, and to cope with stress of impending failure. Belief in positive superstitions could have their basis in quite different mechanisms, such as the promotion of self-efficacy and optimism, as posited by Wiseman and Watt (2004). This might be one of the reasons why both secondary control strategies (lowering aspiration and positive reappraisal) predicted positive superstitious beliefs but not negative superstitious beliefs. Thus, the assertion that secondary control may function as a buffer against negative affect or under conditions of low primary control is only applicable when the secondary control strategies are concerned with positive superstitious beliefs.

God-mediated control and exaggerated internal control significantly predicted negative superstitious beliefs. An individual who believes his or her outcomes are self-produced (internally) or produced by fate or others (externality), and those who believe that God can be solicited in the attainment of outcomes, are more likely to perceive a threat situation as being mitigated by a bad omen (bad luck) (Wiseman & Watt, 2004). As noted earlier, the findings show that there are many ways in which people cope when their primary control strategies fail them; those who choose to adopt substance use and emotional support are most likely to attribute their failure to negative superstitious beliefs. These attributions may inform their adoption of a secondary control strategy to cope with the situation, which in some cases may include supernatural meanings. Thus, in their quest to re-establish control or understand why their instrumental abilities and skill have eluded them in such a critical period, superstitions offer an antidote for their precarious condition.

On a theoretical level, these results have important implications for those wishing to understand why people turn to superstitious beliefs when their primary control strategies elude them. As discussed in the literature review section, almost all of the theoretical work in this area has viewed superstitious thinking within the context of the initiation and maintenance of maladaptive beliefs and behaviour. The significant correlation found in the present studies underline the importance of expanding this theoretical understanding to take account of positive and negative superstitious beliefs and superstitious behaviour. The required expansion should incorporate beneficial psychological functions of superstitions rather than associating superstitious belief and behaviours with psychological maladjustment. The incorporation would be the case if, for example, future research uses an established theory of anxiety to explain the mechanisms underlying why athletes

believing in superstitions are conceptually similar to those that believe in religious rituals. Alternatively, belief in positive superstitions and religious rituals could have its basis in quite different mechanisms, such as the promotion of self-efficacy and optimism, and thus may only be fully explained via theoretical approaches that are substantially different to existing theories.

In conclusion, the results suggest that people may enact their positive superstitious beliefs and religion as coping mechanisms and as a secondary control strategy to offer create a feeling of control under conditions of impending failure. In relation with the theory of control strategies, religious and superstitious individuals can influence their demand and resources appraisal, which can influence their choice of secondary control strategy. This may be either lowering of aspirations or reappraisal, depending on the type of superstition to be activated. It can be suggested that activation or thoughts of negative superstitions may lead to lowering aspirations, while positive superstitious thought might generate reappraisal. Evidence herein suggests that superstition offers some benefits to its users. In turn, these functions may vary depending on the person's demographic makeup and personality characteristics. This evidence provides important information for coaches and sport psychologists to take into consideration when planning team activities. Studies 3-5 were designed to find empirical evidence of how superstitions are developed and maintained and their psychological functional benefits derive by their believers; from the real voices in a professional sport setting. Superstitious thinking can help a person understand his environment. Superstitious behaviours make the world more understandable, predictable and controllable (Keinan, 2002). Through superstitious rituals, the individual may increase his or her control over the threat. The next chapter discuss a



renowned theory of anxiety to understand how superstitious behaviour can help individuals gain control in a threat state or a stressful situation.

## **CHAPTER 5 : INTRODUCING THE THEORY OF CHALLENGE AND THREAT STATES IN ATHLETES (TCTSA)**

Some 90% of the world's population engages in religious or spiritual practices; these practices are a major means of coping with stress, illness and career difficulties (Fowler, 1995; Koenig, 2009). Religious and superstitious concerns are important to most people and most athletes (Walsh, 2011). Per the findings from the previous study, it seems that superstitions and religion might help those who hold these beliefs to deal with pressure and overcome mental and physical obstacles.

From this section onwards, superstitions will be defined to respondents as all forms of religious activities and rituals and routines that are not specific technical skills taught by an expert (e.g., a coach or sport scientist). This classification is necessary because it was evident from the previous study that participants hide under the pretence of their religions and refuted their superstitious rituals (Ofori et al., in press). Jarvis (1980) stated one man's religion is another's superstition. Even though empirical research on beneficial functions of superstitions is scarce, several authors have suggested such a positive influence of superstitious beliefs on psychological well-being (Scheier & Carver, 1985; Taylor & Brown, 1988). Day and Maltby (2005) demonstrated a positive relationship between belief in good luck and hope, and suggested that belief in good luck can be viewed as an important component in goal planning cognitions. Becker (1975, p.151) noted that athletes practice superstitions to "keep things constant and minimize disruption". Thus, it has been speculated that athletes use superstitions to reduce anxiety, build confidence and cope with

uncertainty (Neil, 1980; Neil et al., 1981; Womack, 1979). Schippers and Van Lange (2006) claimed that the benefit of superstitions might stem from reducing psychological tension in athletes, thus enhancing the probability of reaching an ideal performance state (IPS, Garfield & Bennet, 1984; Williams, 1986).

Competitive anxiety can be both facilitative and debilitating to an athlete's performance (Jones, 1995). The sporting environment is a common place where anxiety thrives, with many athletes utilising religious practices, especially prayer, as a coping mechanism and performance-enhancement technique (Czech et al., 2004; Park, 2000). Religious observances such as prayer seem to provide some athletes with a type of pre-competition awareness training that helps centre them and alleviate performance-related anxieties. The effects of prayer for reducing stress and anxiety are supported by empirical research (Janssen, Hart, & Draak, 1990; Koeing, 1998). Yet there is not a single scientific study conducted in applied sports psychology using a renowned theory of anxiety to study superstition and religious behaviour in sports. This helps explain why athletes engage in superstitious and religious rituals before and during competitions (potential stressful situations), this chapter helps explain athletes engage in superstitious behaviour and why the psychological consequences can lead to either a challenge or threat state. This study will draw on existing theories that have been used to explain superstitions and anxiety, and will contribute to the literature.

The sporting environment evokes a stress response by placing many demands on competing athletes (Jones, 1995). How individuals appraise stress as a challenge or threat provides insight into why some athletes excel in performance situations whereas others fail or underperform (Cerin, Szabo, Hunt, & Williams, 2000). Challenge and threat are

motivational states that reveal how an athlete engages in a meaningful situation. Whereas a challenge appraisal is characterised by a more adaptive approach to coping, a threat appraisal is more maladaptive (Blascovich & Mendes, 2000). For example, athletes who see an upcoming competition (uncertain or stressful situation) as an opportunity to demonstrate their competence indicate that, with confidence, the demands of the situation can be met. As a threat appraisal, however, the athlete may consider the competition as a potential avenue to fail due to low confidence in their ability to cope with the stress associated with the demands of the competition.

Moreover, appraising a situation as a challenge can lead to better performance over individuals appraising the same situation as a threat (Blascovich, Seery, Mugridge, Norris, & Weisbuch, 2004). This is because positive appraisal of an upcoming competition (potential stressful situation) results from an athlete's perception of control over the environment and the self, high confidence, and sufficient positive belief that the goal can be achieved (Jones, 1995). This appraisal process can be influenced by the individual's socialisation process. These social variables, such as family and friends, culture and religious beliefs, can influence situational determinants of the appraisal process. Findings from research investigating personal and situational characteristics that dictate challenge and threat appraisals have led to theories and models describing similarities and differences between the two states, including the biopsychosocial model of challenge and threat (BPS; Blascovich & Tomaka, 1996), the model of adaptive approaches to competition (Skinner & Brewer, 2004), and the more recent theory of challenge and threat states in athletes (TCTSA; Jones, Meijen, McCarthy, & Sheffield, 2009).

The TCTSA is specific to athletes in competitive sport environments, and not only amalgamates and extends previous models of challenge and threat (Blascovich & Tomaka, 1996; Skinner & Brewer, 2004), but also includes Jones's (1995) model of debilitating and facilitative state anxiety. The theory explains the following:

- why athletes may appraise an encounter as a challenge or as a threat,
- how athletes respond physiologically and psychologically to challenge and threat states, and
- how the appraised state (i.e., challenge or threat) influences subsequent sporting performance.

TCTSA proposed that self-efficacy beliefs, perceptions of control and goal orientations are three interrelated antecedents to challenge and threat appraisals. It is hypothesised that athletes who feel efficacious and in control, and focus on approach goals in achievement situations, will experience a challenge state. On the contrary, a threat state is thought to occur when individuals possess low levels of self-efficacy and perceived control, and focus on avoidance goals. A further tenet of the TCTSA is that all three constructs are interrelated and all three are necessary for a challenge state. In addition, the TCTSA proposes that emotions (e.g., anxiety) experienced in the situation will be differently interpreted depending on its appraisal.

Research has indicated that the directional perceptions of anxiety symptoms experienced (i.e., whether symptoms are considered to be facilitative or debilitating to subsequent performance) are more influential (e.g., Hanton & Jones, 1999a). Facilitative interpretations of anxiety symptoms were demonstrated to be associated with higher levels

of self-confidence, leading to greater performance standards compared with more debilitating interpretations (Thomas, Maynard, & Hanton, 2007). In addition, Hanton and Jones (1999b) used a mental skills intervention to alter athletes' interpretation of their anxiety symptoms from debilitating to facilitative, which resulted in an improvement in performance for the athletes. So what are the other means of intervention for athletes who lack or possess adequate mental skills? Can routines which are distinct from mental skills, like sport rituals, be incorporated in changing athletes' interpretations of their anxiety symptoms from debilitating to facilitative? The TCTSA suggests that facilitative interpretations of anxiety symptoms will occur when individuals appraise a situation as a challenge, whereas a threat appraisal will result in more debilitating interpretations.

Indeed, there is evidence suggesting that uncertainty regarding future outcome, low perceived control and helplessness are important determinants of superstition (Keinan, 2002; Malinowski, 1954; Rudski & Edwards, 2007; Vyse, 1997; Matute, 1994). It's on this basis that researchers such as Neil (1980) found that superstitious behaviours have been used to reduce anxiety, build confidence and cope with uncertainty. Such rituals may help athletes to lower arousal, avoid "choking" and aid them in directing their full attention to the task at hand. They will not help them overcome physical or skill inadequacies, but well-disciplined, highly conditioned athletes may use rituals to screen out distractions and order their world so that they are free to concentrate on the game. In this sense, superstitious rituals may play a role in the athlete's preparation for competition, and as such serve a facilitative interpretative role in their appraisal processes.

The TCTSA suggests a challenge state is developed by targeting self-efficacy, perceived control and approach goals. Jones et al. (2009) explain that by manipulating an athlete's

perceptions of situational characteristics previously evaluated to be a threat, the athlete can reappraise the situation as a challenge. This would lead to more adaptive behavioural tendencies associated with successful performance (Blascovich et al., 2004). Studies have documented that superstition can lead to improved self-confidence (Damisch et al., 2010) and control and reduced anxiety (Neil, 1980). Hence, adaptive behavioural tendencies such as superstitions can influence an athlete's perceptions of situational characteristics previously evaluated to be a threat; the athlete can reappraise the situation as a challenge and vice versa.

## **Statement of problem**

One condition that appears to be common for all superstitious behaviour is situation uncertainty, termed the “uncertainty hypothesis” (Burger & Lynn, 2005). Vyse (1997) suggested that the basic human desire to gain control in ambiguous situations was a significant motivating factor in superstitious behaviour display. Superstitious behaviour may be generated by needs to establish control and enhance self-efficacy. That is, attributing outcomes to controllable factors has been consistently associated with high self-efficacy (Bandura, 1997; Haney & Long, 1995), while attributing outcomes to uncontrollable factors has been consistently associated with low self-efficacy and learned helplessness (Bandura, 1997; Seligman, 1975). In situations of uncertainty, the attempt to gain control through superstitious behaviour may have a positive effect on self-efficacy. In contrast, no attempt to gain control through superstitious or other behaviour could indicate any of these three things; very low self-efficacy, high self-efficacy and even learned helplessness. This may be due to how the individual perceives the context.

Ono (1987) indicated that people often repeat responses that resulted in positive outcomes, and change responses after a negative outcome. In his experiment he used Japanese university student volunteers as his participants. The participants sat in front of a table fitted with three response levers. Each student participated individually during a single forty-minute session. Ono told students that they were not required to do anything in particular but that they should try to earn as many points as possible. Points appeared on the counter on different schedules for different participants, sometimes at varying intervals, but always completely independently of anything the students did. Electrical equipment in



another room recorded any movement of the levers, and each student was observed through a two-way mirror.

A number of superstitious behaviours soon emerged. Some were consistent throughout most of the session; others were transitory, appearing for short periods and then disappearing, often to be replaced by new superstitious behaviours. Most of these behaviours involved patterns of lever pulls. Superstitious rule generation and having confidence in these rules increased as the probability of receiving positive reinforcements increased. The study suggested that the development of superstitious behaviour was a function of different reinforcement schedules, and people create superstitions based on their apparent success or failure in a task in that behaviours that are perceived as rewarding continue to be exhibited, while those seen as negative become gradually extinct.

Despite the clear distinction between pre-performance routines and superstitious/religious rituals, they both serve similar functions in dealing with pre-game anxiety. Superstitious rituals have been documented to help people improve self-efficacy, regain control and cope with pre-game anxiety. Athletes vary in their cognitive appraisals of upcoming competitions; this may be due to their socialisation process. There are people who by virtue of their upbringing or religious beliefs enact superstitious or religious rituals when they are confronted with a stressful situation. When experiencing elevations in competitive anxiety, athletes may substitute these rituals in place of mental skills to make them feel efficacious and in control of the situation. This may in turn be perceived as facilitative to performance. Thus, athletes susceptible to a threat appraisal of stressful scenarios could use superstitious or religious rituals to alter cognitive appraisals and associate experienced physiological and psychological responses as facilitative to performance.

The next part of this thesis seeks to examine superstitions in sports within an established theory of anxiety: the TCTSA by Jones et al. (2009). An athlete needs to have a high perception of control to experience high self-efficacy and be focused on demonstrating competence in a sport setting. The appraisal process, which determines the interplay between demand and resources, can be conscious or unconscious, and may fluctuate during competition as demands and resources are continuously appraised. This appraisal process can be affected by the athlete's religious or superstitious beliefs, since religion has been used as a coping mechanism (Carver, 1997). In a threat state, can an athlete rely on his superstitious behaviours or religious rituals to gain high self-efficacy and a sense of control, and focus on approach goals? It was expected that superstitious or religious behaviour may influence athletes' appraisal processes.

A key feature of the Theory of Challenge and Threat states in Athletes (TCTSA) is that it outlines how athletes might regulate their psychological states effectively for sport. In the TCTSA, regulating psychological responses draws on, and depletes, a limited pool of resources that is available for controlling all emotions, thoughts and behaviours (Baumeister, Heatherton, & Tice, 1994; Baumeister & Heatherton, 1996). Anxiety will have a negative influence on performance in a threat state because a low level of self-efficacy and low perceived control does not result in greater mental effort when one is anxious, and is likely to be associated with increased reinvestment during performance (Jones et al., 2009). For example, when an athlete experiences low self-efficacy and perceived low control, they are likely to dig deep into the resources available to deal with self-doubt, negative thoughts, negative behaviours and other negative emotions. To be able to reinvest in their psychological responses with as few resources (religious rituals) as

possible and stay positive will be helpful because it can enhance the resources that will be needed during the competition. Superstitious behaviour has been evident in situations of low perceived control, uncertainty and stress, which can be equated to threat state according to the TCTSA. Athletes in threat states or experiencing psychological tension are more likely to engage in superstitious behaviour (Schippers & Van Lange, 2006). Athletes engage in superstitious practices not because they believe in them, but in order not to take chances. So can superstitious behaviour be activated as a means of avoiding a state of threat or regaining control when experiencing psychological tension?

A plethora of previous research on superstitious beliefs and behaviour has examined various factors that contribute to this phenomenon. Much of the work focused on the following questions: how frequently are superstitious behaviours used in sport? How are superstitious behaviours developed and maintained? What kinds of superstitious and magical thinking exist? Where and how do sports superstitions originate, and under what conditions do they persist? Which people are especially prone to superstitions? Which circumstances are especially likely to elicit superstitious thoughts and actions? However, despite the ubiquity of this phenomenon, little is known yet about the psychological function of superstitions and religion in an athlete's career. To remedy this shortcoming, the present thesis attempts to specify the actual consequences of superstitions and religion in athletes' life experiences, as well as in situations where they are likely to call on external sources for control.

Could it be that superstitions engaged in performance-related contexts by athletes do not only hinder the development of learned helplessness and thus performance impairment but, moreover, help regain control, enhance self-efficacy and cope with career uncertainties? In

fact, several researchers have suggested such a beneficial function of superstition as an explanation for the high prevalence and maintenance of superstitions in sport. The present research set out to fill the gap in empirical evidence supporting the notion that superstitions can indeed have an effect on the individual athlete, the team and the performance outcome. The main purpose of the next stage of the thesis was to find an answer to the question of whether superstitious behaviours and beliefs indeed have consequences for those who hold them. Specifically, the research was conducted to explore in detail how superstition and religious behaviour and beliefs are developed and maintained among elite footballers, and how social influences affect their sport rituals. The secondary purpose of study is to explore the perceptions and experiences involving superstitious and religious behaviour, how and when superstition can be useful in an elite athlete's career experiences, and the likely consequences on the team and performance outcome. The next stage of this study also aims to use portions of the Theory of Challenge and Threat States in Athletes (Jones et al., 2009) to explain superstitious experiences in elite footballers' careers.

## CHAPTER 6: STUDY 3

This study is based on the findings from Studies 1 and 2, which found that religious coping has a negative relationship with both negative and positive superstitious beliefs, and a positive relationship with superstitious behaviour. Research in the field has been inconclusive regarding the functionality of paranormal beliefs (superstitions) and conventional religious practices in sport (Buhrmann & Zaugg, 1983). Many authors have suggested that paranormal and superstitious beliefs may develop in anxious individuals with a strong need for control, as an attempt to overcome perceived uncertainty in their surroundings (Irwin, 2000; Jahoda, 1969; Malinowski, 1948), or as a coping mechanism following traumatic childhood experiences (French & Kerman, 1996; Irwin, 1992; Lawrence et al., 1995; Ross & Joshi, 1992). Superstitious behaviours have been used to reduce anxiety, build confidence and cope with uncertainty (Neil, 1980). Matute (1994) stated that superstitions are utilised to give the illusion of control in uncontrollable situations. The TCTSA posits that practitioners can use these tenets to determine challenge or threat state of athletes response to high anxiety situations. The sport and the academic environment may be perceived as uncontrollable and may lead to elevated anxiety for athletes, coaches, students and spectators. Superstitious behaviours and rituals are thought to reduce anxiety (Womack, 1979) and create a sense of control in high-stress and uncertain situations and states of learned helplessness.

Superstitious beliefs and behaviour, like various religious practices, seem to be the product of a society. Thus, it seems that athletes may develop rituals that correspond with their personalities, personal belief systems and cultural process, as was evident in Study 1 with

the correlations that were found between these variables. In all these, describing the social location of and the social influences on superstitious beliefs and behaviour have not been taken into consideration. The present study sought to explore the experiences of elite Ghanaian footballers playing professional football at home, elite Ghanaian footballers playing abroad after playing some years at home, and elite Ghanaian footballers born, socialised and playing in Europe.

It is suspected that because superstitious and religious rituals consist of a predictable sequence of actions, individuals perceive themselves as being in control when performing them. Rituals are easily linked to magical beliefs because actions ordinarily have effects on one's environment. Therefore, elite athletes expect that their ritual behaviours will enable them accomplish certain targets, although that may not always be the case. In all these inconsistent outcomes associated with sport rituals, magical beliefs are still able to fulfil that cognitive expectation (McCauley & Lawson, 2002; Sørensen, 2007b). The inherent sense of control that emerges from repetitive fixed action patterns makes rituals particularly receptive to associated magical beliefs about the power of ritual performance to influence social and environmental conditions (Rappaport, 1999). As anticipated by the uncertainty hypothesis, research has demonstrated that a desire for control is an important motivation for magical behaviours (Keinan, 2002).

Researchers have long speculated about the origins and functions of such beliefs (see, e.g., Frazer, 1922; Jahoda, 1969; Malinowski, 1948; Vyse, 1997). In particular, this study examined what kind (functional or dysfunctional) of superstitious or religious behaviours are used by elite athletes during career difficulties (de-selection, injuries and so on), when

competing in an important event and responding to opponents rituals, and what athletes do after these negative experiences.

It is argued that a sense of control, a feeling of efficaciousness and a focus on approach goals are essential for attainment of a challenge state (Jones et al., 2009). Thus, when an athlete possess low levels of self-efficacy and perceived control, and a focus on avoidance goals, superstitious or religious behaviours and beliefs emerge because they restore this apparently vital sense of control, efficacy and approach goals. The benefits of an increased sense of control include increased optimism and enhanced self-efficacy, both of which have been shown to improve task performance (Bandura, 1997) and essential conditions to satisfy a challenge state.

**Research Questions:**

Can superstitious behaviour serve as a coping mechanism?

Can superstitious behaviour serve as a means of gaining control that will facilitate a shift from a threat state to a challenge state?

Can superstitious behaviour serve as a means of gaining control that will mitigate against an athlete feeling a threat state?



## **Methods**

### **A Qualitative Design**

This study was interested in examining elite footballers' subjective experiences of religious and superstitious usage across their life spans; as such, qualitative content analysis was used (Gould, Finch and Jackson, 1993). Qualitative research is suitable for discovering how people perceive the particular situations they face, and how they make sense of their personal and social world. A qualitative method is especially useful when one is concerned with complexity, process or novelty (Smith and Osborn, 2003). Given the purpose of examining superstitious and religious experiences of elite footballers throughout their careers, a qualitative study enabled this study to consider participants' personal and social worlds. This method of research was adopted because of the existential conception of the relation between human behaviour and the environment. Individuals' behaviours normally develop through the interaction between their personality and their society. A qualitative method is most likely to elicit the issues surrounding these factors and how elite footballers develop and maintain their superstitious beliefs and behaviour. Interview questions can clarify the personal and situational considerations that influence the development and maintenance of superstitious behaviour. A qualitative design seems well suited to the description and understanding of the complex issues associated with superstition in sport. The present study also wanted to represent the reality of superstitious and religious rituals from the perspective of elite footballers, and also understand the complexities of the rituals.

## **Inclusion Criteria and Recruitment**

Purposive sampling was used in recruiting participants for the study. This strategy offered the opportunity to identify specific individuals who were able to provide the information needed to answer the research question. Elite Ghanaian footballers were selected because in Study 1, participants from Ghana tended to be more superstitious than their British counterparts. Also, the issues pertaining to religion and superstitions are important to an average Ghanaian football athlete (Ofori et al., 2012). One's personality and culture are inextricably intertwined, and a powerful way to appreciate the behaviour of elite athletes is to understand how their culture influences their behaviour. Records of elite professional footballers for the past decade were scrutinised, and players were observed to identify individuals who appeared to meet the following inclusion criteria:

- Should play in a professional league, because they are elite performers.
- Have at least played in a major international tournament either at the junior or senior professional level.
- Should have been observed engaging in a ritual before, during or after a game or training. This was discovered by following participants' training and games.
- Willing to give informed consent.

From these procedures and inclusion criteria 15 possible participants were identified, 12 of whom expressed an interest in participating, and 10 of whom completed the study.

## Participants

I purposefully sampled a relatively homogenous group of footballers of similar ages and competitive levels. I assumed that these elite players would have experienced performance/career-related stressors and might have coped both effectively and/or ineffectively with these stressors at one time or another by engaging in superstitious rituals. I also assumed that elite footballers performing at the international level would have a great deal of personal investment in their performances, because their success would have a significant influence on their future career prospects (transfers, selection and de-selection) in football. Male professional football participants were selected as the target group for the following reasons:

- To create a better rapport with the participants, I visited the team's training camps.
- To avoid possible gender by culture interactions, given this small sample size.
- Professional footballers were selected because the highly stressful environment epitomises conditions under which superstition is expected to develop.

Participants were ten male professional footballers who played professional football in Europe and Ghana, aged between 18-35 years (mean 22 years). All were of African origin; four were born in Europe by Ghanaian parents and had never played in Ghana, one was born in Ghana and was currently playing in Ghana, five were born in Ghana, had played in Ghana before and were currently playing in Europe.

The values of the dominant society relating to achievement are supported by their cultural norms but where opportunities in such communities are limited and the time span for

achievement of career goals is compressed, individuals are likely to go any length to achieve their goals. Together, these factors have the potential to create a threat or challenge state for players. The competition among professional athletes is severe, and few are successful. In addition, their career is comparatively shorter than non-sporting careers. Elite footballers may resort to all forms of superstitious behaviours as a means of coping with the uncertainty associated with their profession.

### **Procedure**

Written contact was made with the Ghana Football Association to explain the study. The data collection took place during and after the FIFA 2010 World Cup, with permission granted and in compliance with the University Ethics Committee. Qualitative data were obtained by means of individual interviews with participants. Due to the derogatory meaning given to superstition, which has led to an underestimation of its prevalence (Plug, 1976), I watched participants' training sessions and competitive games to ascertain their involvement in superstitious rituals before they were selected to be interviewed. The primary emphasis of the interview was to find out the players' perspectives on their use of such superstitious rituals. Triangulation of participants' views and the researcher's perspective was based on my observations of the participants' games and training sessions, which provided an important 'credibility check' (Yardley, 2000; Elliott, Fischer & Rennie, 1999) and added valuable information. The interviews were conducted on two occasions, approximately six weeks apart, and triangulation across two different time-points was a further means of strengthening internal validity. Participants' anonymity and confidentiality was assured both verbally and in writing. Participants chose their pseudonyms, which have been used throughout this study.

I conducted all the interviews with the participants. The mean duration for the interviews was 53 minutes. Interviews were tape-recorded for later transcription. Rapport and trust are important issues in qualitative interviewing (Smith, 1995), particularly in the topic I was examining: I expected players to tell me about their religious or superstitious experiences. To help establish trust, I followed the team during their training camps. To achieve depth and comprehensiveness in the interviews (Culver, Gilbert, & Trudel, 2003), I watched the participants' training and games to offer me an insight into their ritualistic behaviour.

### **Data Collection**

*Interview protocol.* Participants were told that they would be asked about superstitious experiences and other issues relating to their football careers, and the author answered any questions they had. Most questions were procedural (e.g., “how long will the interview last”, “what will it be used for” and “how will it benefit me [the player]”) rather than about the content of the questions that would be posed. The participants were informed that the duration of the interview would depend on how much they had to say. They were also assured that it was for research and not for the media. I also disclosed some personal information, explaining that I was a 31-year-old PhD student with a long-standing interest in football. I have worked as sports science support staff for some clubs in the last three years and have a long-term desire to work within the football industry. We then talked for a short while about football (general “small talk” rather than a conversation directly relating to the study). This prior contact helped prepare participants for the formal interview and provided opportunities for me to initiate a professional relationship.

*Semi-structured interviews.* Data were collected using semi-structured interviews (Smith, 1995; Smith & Osborn, 2003). The interview guide was based on Ciborowski's (1997) belief questionnaire and Skinner and Brewer's (2002) Cognitive Appraisal Scale (CAS). With semi-structured interviews I had a set of questions, but I was guided rather than dictated by them. Within this approach, I (a) attempted to develop rapport, (b) put minimal emphasis on the ordering of questions, (c) probed interesting areas that arose, and (d) followed the respondents' interests. Reflective and open-ended questions facilitated discussion and allowed interviewees to tell their story in their own way. The aim was to try to enter, as far as possible, the psychological and social world of the respondent.

*The interview schedule.* As Smith and Osborn (2003) advised, the interview started with general questions, and then if these questions did not elicit sufficient information, probe questions or prompts were used. After an initial rapport-building conversation (about the participants' careers, involvement in football, personal life, etc), I then wanted to ensure that participants provided stories about themselves and their superstition in sports. To minimise participants' feelings of embarrassment or fear of negative evaluation, which has often been reported in research on superstition, participants were given several examples of well-known athletes who reportedly exhibited superstitious practices. A definition of superstition (modified from Bleak & Fredrick, 1998) was also read out at the start of the interview:

“I am interested in superstitious experiences in your career. ‘Superstition in sport refers to actions which are repetitive, formal, sequential, and distinct from technical performance and which the athletes believe to be powerful in controlling luck or other external factors

which may include a superstitious ritual'. Superstitions are all forms of signs, gestures and acts that are not taught by any expert." See the appendix for interview questions.

There was a follow-up interview to allow participants to confirm the transcription of their first interview and to clarify certain key statements. After, the interview participants were debriefed as to aim of the study and to re-assure them the absolute confidentiality of their responses.

## Data Analysis

I assumed that the experience of engaging in superstitious rituals would be influenced by participants' socialisation history, and they would actively seek to gain control in the sporting environment, where uncertainty abounds. I also assumed that people who have been coerced to engage in superstitious rituals would be able to provide meaningful accounts of their experiences as an essential precursor to attempts at psychosocial intervention and to formulate policies about it. It was essential to hear the voices of players who had been coerced into engaging in superstitious rituals to ascertain if those rituals can also serve some psychological functions or dysfunctions for the athlete.

All data were transcribed verbatim by myself and coded to ensure athlete anonymity and confidentiality. The data were subjected to the following steps. First, all transcripts were read several times so that I could become familiar with the content. Second, individual meaning units were identified from the interview transcripts through the process of line-by-line analysis ("micro-coding"; Strauss & Corbin, 1998). Third, similar meaning units were cut from individual transcripts and pasted together as files, which became the subordinate themes of this study. Fourth, each theme (file) was assigned an essence phrase (Maykut & Morehouse, 1994), which conveyed the essential meaning contained by the text housed in that theme. (For example, the theme "religious ritual" was assigned the essence phrase, "refers to perceptions that the athlete was involved in a religious activity"). Fifth, similar themes were grouped together and placed in a folder, which was again assigned an essence phrase to convey the meaning of the themes it represented; these folders became the subcategories (i.e., performance approach, negative emotions, injuries, religious coping, luck, socialisation process). These categories were then classified according to whether



they reflected (a) superstitious experiences, (b) determinants of success, (c) sources of superstition, or (d) the functionality of sport superstitions. Throughout this analytic process, each group of meaning units, theme and folder was carefully analysed using the constant comparative method (Glaser & Strauss, 1967) to ensure that the meaning units in each theme were on a similar topic, and the meaning units in different themes were distinct and appropriately categorised.

As the themes were clustered, they were checked with the transcripts to ensure that the connections were from the primary source material (i.e., the actual words of the participant). Once a coherent list of related themes was finalised, extracts representing themes were selected, to give a clear representation from the data. At this point, I contacted all the participants to discuss their interpretations in a member-checking procedure (Patton, 1987), the results of which are reported below.

Two further analytic techniques were employed. First, a hierarchical conceptual framework containing each of the meaning units was constructed using diagrams and memos (Patton, 2002; Strauss & Corbin, 1998). The purpose of this conceptual framework was to represent connections and relationships among the data to identify the processes that were associated with the footballers' superstitious or religious experience, perceived outcomes of superstition and sources of superstition. Second, a summary of themes and examples of raw data extracts were created (see Table 9), which reflected the extent to which each participant reported themes, to provide indications of the various levels of data saturation associated with each theme.

To avoid the inherent bias of categorising new information according to preconceived constructs (Patton, 1990), an inductive content analysis was conducted initially. As an additional verification of the inductive analysis, the raw data themes, sub-themes and main themes were tested by conducting a deductive analysis whereby the researcher reread the transcripts and verified that all themes and categories were represented. DCA provides a theoretical framework from which to form coherent interpretations of complex psychological and behavioural processes (Patton, 1990) as the phenomena under study. By this means, the accuracy of assigning the athletes' statements to categories, or the themes, may be enhanced, thereby reducing, although not eliminating, the likelihood of interviewer bias (Anshel, 2000). Once the data had been inductively and deductively analysed, a hierarchical conceptual scheme (see Figure 1) containing each category, subcategory and theme was constructed using diagrams to create a framework that explained the interrelationships between the data (Strauss & Corbin, 1998).

A brief word is warranted on the role of the themes in qualitative research. As Van Manen (1997) explained, themes are "like the knots in our webs of experience, around which certain lived experiences are spun and thus lived through as meaningful wholes. Themes are only fasteners, foci, or threads around which the phenomenological description is facilitated" (pp. 90-91). In other words, themes are the skeleton upon which the body of the story (i.e. the results) are written. Consequently, the final stage of data analysis involved developing a written account from the themes (Smith & Osborn, 2003).

The themes were written into a coherent description of the footballers' superstitious or religious experiences, using the participants' 'voices' wherever possible. This written account was then reviewed by my supervisors and rewritten several times. This continuous

cycle of writing, reviewing and rewriting extended over several weeks. Given that the purpose of my study was to understand in detail how superstition or religious behaviour and beliefs are developed and maintained among elite footballers, their perceptions and experiences involving superstitious behaviour and how and when superstition can be useful in an elite athlete's career life experiences and perception were necessary. Hence the need to establish how superstition and religion can be integrated into their secondary control strategies, and using Theory of Challenge and Threat States in Athletes (Jones et al., 2009) to explain superstitious experiences of elite footballers; careers. I chose to provide a data summary of the themes (i.e., Table 9) to provide the reader with more transparency by which to judge this analysis.

### ***Validity, Trustworthiness and Goodness Criteria***

I adhered to a non-foundational approach to validity (Sparkes, 1998). The non-foundational approach involves developing specific techniques that could be used for this particular study to enhance its "trustworthiness" (Schamber, 1991) or "goodness" (Strean, 1998). Schamber used terms generally associated with positivist studies: "internal validity", "external validity", "reliability" and "generalizability." I used specific techniques (bracketing, review by a critical friend, member checking and independent auditor), which are explained below.

Prior to and during data collection and analysis, I maintained a reflexive journal to help "bracket" my personal experiences and consider the influence of my personal values and sporting experiences on the research (Smith & Osborn, 2003). This reflection helped me separate my personal views from the interpretation of the results. I wrote about times when

I engaged in superstitious ritual and religious activities in my life, and I was careful to avoid interpreting the participants' words purely in the context of my own experiences. This technique might have helped me start moving toward the engagement of scientific reduction (Giorgi & Giorgi, 2003). Given that phenomenological reduction is a complex task for a neophyte researcher (and most likely impossible to achieve in the short-term as it represents a philosophical state of mind), I paid more attention to bracketing assumptions than I did to adopting a philosophical position (Nicholls, Holt & Polman, 2005).

To maximise internal validity, "thick" descriptions of the findings were provided. A thick description refers to an in-depth portrayal of the phenomenon that permits readers to accurately grasp the essence of the story. In addition to making entries about how my assumptions may have influenced the research, I also engaged in regular conversations with my supervisors, who played the role of "critical friend" (cf. Holt & Sparkes, 2001), who helped me uncover biases in my analytic approach, questioned analytic decisions and asked about how certain examples reflected the footballers' subjective experiences. Instances where my supervisors queried analytic decisions were settled through a process of advocacy and discussion, whereby we both discussed my interpretations. Combined, maintaining a reflexive journal and engaging in debriefing discussions helped me become more aware of my own perspective as well as being aware of the participants' perspectives.

Furthermore, the transcripts and identified themes and my interpretations were discussed on the telephone with participants to validate their accuracy and the representativeness of the content. This form of member checking gave informants' views regarding the credibility of the findings (Creswell, 1998).

The data set was reviewed by an independent researcher experienced in using qualitative research to provide a check of the validity of the analysis and the interpretation of participants' accounts (Clare, 2010). The independent researcher ensured that meaning units were assigned and themes grouped appropriately, and that the model reflected the participants' accounts. The independent researcher also followed the "paper trail" through the stages of analysis for a subset of transcripts. Any queries or differences of opinion were discussed to reach a consensus. This process resulted in minor changes to the summary list of themes.

Informally, further checks on validity were provided through discussion with other qualitative researchers and football experts. The level of interest generated on these occasions, and the comments made, suggested that the model and descriptive account did indeed "resonate" with the listeners (Elliott et al., 1999; Yardley, 2000).

## Results

Raw data themes were inductively and deductively extracted from the transcripts regarding how superstition and religious behaviour and beliefs are developed and maintained among elite footballers, and how social influences affect their sport rituals in their career. All the participants described their religious and superstitious experiences throughout their sporting career. They recounted how they developed their religious or superstitious experience, when and where it became functional or dysfunctional to them and ways in which they had tried to adjust to the difficulties they encounter in their career. These religious or superstitious rituals were shaped by their reactions to threat (uncertainty, low perceive control) and how they used these rituals to migrate from a threat state to a challenge state. In the following results section, athletes' sources of rituals, personal control, uncertainty, perceived outcomes, response to others' rituals, coping strategies and challenge and threat states are discussed.

The main themes and sub-themes are summarised in Table 9. Figure 1 reflects how elite professional footballers engage in superstitious or religious rituals in the course of their careers. Figure 1 indicates the sources of rituals, social context and perceived outcomes of rituals (functional and dysfunctional).

## Sources of superstitions

It was evident that many of the participants' rituals were established through religion, which they experienced through the socialisation process (Gregory & Jane, 1972).

### *Socialisation*

*Our culture and way of life is based purely on the Islamic principles, and anything that our religion forbids, we desist from it. Apart from that we don't have any rituals or superstitions in our communities. (Mendy)*

*Muslim is the whole family's religion; it was my Dad who introduced all of us into it. (Senior)*

*I am a Muslim and everybody in my family believes in God. We all know that we have to continue the family process. If the family belief in something and everything goes on well with them, why will you want to stop, I think that is answer. (Junior)*

It was through the socialisation process that these participants acquired the beliefs of the culture they were born into, through social agents such as their family members. It is this socialisation process that might have moulded them in particular directions by encouraging specific beliefs and attitudes as well as selectively providing experiences.

***The team as part of the socialisation process***

Team rituals were normally representative of the dominant religion in the team:

*There are too many Muslims in the team, they normally suggest we form a straight line and face the sun, like they normally do in the mosque. The Christians normally form the circles to signify that they are one and no cracks in the teams. (Amoako)*

Some participants engaged in religious rituals because all other members of the team were taking part. These traditions continued when desired results were attained. Athletes accept these new team traditions and get used to them.

*I believe so much in my personal beliefs and I don't believe in superstitions, though sometimes I get myself involved within the game. It's really difficult. (Yusif)*

It was also evident that players engage in rituals not because they believe in them but for acceptance among teammates.

*I don't have any belief in them but I have to do it because we are in a group and all other teammates are doing it. Everybody is doing it in the group, so I must do it as a member of the group. We all have one purpose, so if they are all doing I must also do it. (Amoako)*

*I don't believe in superstitions but I do them sometimes to prevent my teammates from talking against me. I normally engage in my religious rituals before joining my colleagues, so even if I part take in the team ritual, I don't believe in them. (Mendy)*

Changes in behaviour or belief resulting from such a real pressure from teammates represent conformity. It was noted that participants show compliance to these rituals to



which they are introduced. There were also social influences from club officials and supporters, and players had little or no choice but to obey them:

*Before games officials of our team bring objects, various forms of liquid solutions, for us to bath with it or wash our feet in them. (Amoako)*

*They will bring it and warn you, if you don't take you will not start or if you start and you get an injury you will go for your own treatment, and all forms of threats to coerce you to use them. I remember there was a time I challenged one management member of my team, I will not take it and I believe I will still perform. (Sam Ink)*

*The supporters will bring them, and in our desperate attempt for a win we do them. We get involved because we want to win. So it is all about victory. So I think if you believe in it you acquire it. Like I said, when the fans bring them and we use them, is because we want to win, and it can also lead others to acquire them. (Yusif)*

This demonstrated the extent to which elite athletes will obey an authority figure. The fans' leadership is well represented at club management and as such they can use their position in the executive to impose these rituals on athletes. By virtue of their youthfulness, players have a relatively low social status in terms of age. To a player, almost everyone in the club's management is an authority figure, and parents are particularly important authority figures. Thus, the role of authority figures in the psycho-social transmission of religious and superstitious rituals represents a complex dynamic and may be functional as well as dysfunctional to the athlete.

The interviews also provided an understanding of how elite footballers' superstitious and religious rituals are established through various social agents. It appears that several

psychological processes may be involved. The simplest of these appearing in the interviews is exemplified by reinforcement from previous ritualistic behaviour.

## **Personal Control**

Personal control refers to an individual's belief that events and outcomes in one's life result from one's own actions (Ross & Mirowsky, 2002; Rotter, 1954). In sports, athletes who perceive higher levels of control are likely to report higher levels of satisfaction, motivation, commitment and involvement in their sports (Spector, 1986 cited in Burke et al., 2005). Personal control seemed to play a factor in particular superstitious or religious ritual subscribed by the athletes. It was found that most participants believed their actions alone were be enough to gain control over chance events, and only God can help them;

*You have to know what you believe in and have the faith in what you believe in. I personally believe in God, and with Him everything is possible, and makes you believe in your abilities. The only thing that can happen to you is that which God has sanctioned to happen. (Junior)*

*I believed in only prayers. I know that without God I can't make it in life. God can help me with everything that I do. It's the prayers that will enhance my performance. It is through the prayers that God will open opportunities and chance in football for me. (Kev)*

*In defeat I don't attribute it to bad luck or anything. I don't say that maybe God didn't listen to my prayers. All I know is, we deserve the defeat; that is why we lost. (Amoako)*

*There is something like luck. But I don't know if it is really luck, because if God planned it that you will hit the ball on the defender and it will go into the goal, is it luck? Or, that is*

*why I don't really know if the word luck really exists. I believe in God, and I know that He can help me, so what motivates me is like, He said whatever you need, whatever you want He will give it to you. So if I need power, I will ask Him, if I need strength; I can ask Him. If I need confidence, I can ask Him; that motivates me to pray and do all kind of things before the matches. (Mitch)*

*With God everything is possible and without God everything is impossible. (Rene)*

Belief that God is powerful and He aided their achievement outcomes is an indication that without religious rituals, they have limited control. This explains why athletes develop and sustain superstitious and religious behaviours that have their sources in their religion. Perceptions of control are critical to elite athletes irrespective of the leagues they play in and their socialisation process. The majority of participants in this study believed they cannot control outcomes directly by themselves but they can indirectly control outcomes through God's help.

One group of participants believed their outcomes were a product of their abilities. They represented the General Internal Control dimension, which is the extent to which an individual believes outcomes are self-produced as opposed to being produced by luck, fate or God. Participants demonstrated it will take their internal attributes to be successful:

*Without hard work, you can't gain selection based on faith, after all there is a saying that God helps those who help themselves. (Sam Ink)*

*If I am not successful then it means I didn't work hard enough. But in victory, I know that I worked harder and it was by the grace of God. Normally I think about it for some few days and after that I have to forget and focus on what I didn't do well and move on. (Kev)*

*Is not the fault of the coach, is just my own technical inabilities. (Mitch)*

Some were of the view that they will need God in addition to their technical abilities to be successful.

Exaggerated control is an individual's extreme and unrealistic belief in personal attributes. It was the least frequently mentioned among participants. One participant is highly religious and believes in God but yet was of the view that sports performance has no link with religion:

*I will say to myself, I am the boss. I don't believe in superstitions; those things are rubbish,*

*I think football is your head, what you say to yourself, is what you will do. Like I tell myself 'today I want to score a goal and give two assists' and if you have that confidence it can help you.*

*.....luck no, focus that is true, yea, hard work, but luck, I don't believe in luck. Luck has to come from yourself.*

*I believe in God but I don't pray before a match... I can pray to God to protect me from injuries but I don't think I will pray for a win. I don't pray for luck and I don't pray before a game, my prayer for protection from God is part of my prayers when I go to church or am in my room. You get the ball, you think God is going to develop this skill, I don't believe in that. I think is more of self-confidence. (Je)*

It was evident that in situations of high risk, like sporting injuries, cynics will even engage in a religious ritual to gain control over the seeming uncertainty. In their demand appraisals, the danger of injury and the humiliation of defeat, and uncertainty of how to

handle competitive pressure, a ritual engagement becomes the escape route. Resource appraisals relate to the athlete's ability to cope with the demands of a situation, and include skills, knowledge, abilities, dispositional factors (e.g., self-esteem, sense of control) and external support available to the athlete. This external support may include the athlete's superstitious or religious rituals. This suggests that God-mediated control athletes differ from internals and externals as traditionally defined.

### ***Uncertainty***

One universal truth about superstition is that superstitious behaviour emerges as a result of uncertainty in circumstances that are inherently random or uncontrollable (Vyse, 1997). When an individual perceives a situation as dangerous, he is unsure of his ability to deal or cope with the situation. The uncertainty regarding injuries and the outcome of the game, and seemingly having no control over coaches' decisions regarding team selection, leads footballers to engage in religious or superstitious rituals:

*Players who are not God-fearing may try any means possible, including spiritual ways, to harm you so that they can be selected to play. If you pray to God that you are going into a game, he should protect you from injury and give you a good day because you are going to perform before an audience (Amoako)*

The uncertainty runs through all participants interviewed, irrespective of their socio-cultural background. This suggests that religious and spiritual rituals increase footballers' sense of control, which reduces anxiety and allows individuals to cope with their unpredictable conditions and successfully perform the high-risk tasks they face:

*Before training I pray for God's protection against injury and also for favour in the eyes of the coach so that I will be selected for games... I wake every morning, I pray to God to grant me strength and protection against injuries, especially injuries that will get me out of the game for a longer time, say eight weeks and above. I do this because with our career, if you get injuries frequently it will affect you, you will not enjoy it and may not be strong enough to compete at the highest level. (Sam Ink)*

Interestingly, what also emerges is that some of the participants make use of superstitious or religious rituals not because they want to win but because those rituals offer them the reassurance of feeling in control or protected against injuries:

*I can pray to God to protect me from injuries but I don't think I will pray for a win because winning depends on your hard work. (Je)*

Some participants tend to turn to superstitious and religious rituals when dealing with outcomes that are important to them and facing conditions of high uncertainty in competitive situations:

This is an indication that elite footballers are more likely to resort to superstitious or religious rituals when they believe outcomes are largely affected by uncontrollable forces.

## Determinants of success

Athletes' perceptions of what can influence or contribute to a successful career or performance can lead to their development and maintenance of superstitious and religious rituals. Some participants were of the view that success is relative to the individual, and what one person may perceive as a successful career or performance, another may not. It was noted during the interviews that most of the participants attribute their success to physical preparation, followed by luck, mental preparation and superstition. Physical preparation had no socio-cultural barrier, and participants from developed and under-developed football leagues rate it very highly:

*Hard work and luck count a lot in football. Because you need to work hard to take the chances that luck brings to you. (Amoako)*

*No, focus on your performance that is true, yea hard work, but luck, I don't believe in luck. (Je)*

When asked to score how much superstition has contributed to their success on a scale from one to ten, only one participant who scored superstition one. This participant was born and socialised in Europe. In the same vein, mental skill as a determinant of success was rated zero by the participant from an under-developed country. However, some of the participants claim that luck plays a role in deciding who wins and preventing injury:

*I have a lot of luck in penalty saving. (Amoako)*

Those who believe luck is a key component of success engaged in superstitious and religious rituals to attain it to enhance their performance:

*Luck can influence your performance if you have it but sometimes in the whole match you don't get luck and you have to depend on yourself...luck is good to have but you cannot always depend on luck. To be lucky you have to pray a lot, and believe in it. I do the sign of the cross and kiss my fingers and raise it to the skies, to be lucky. Because I have prayed before the game, I think if I make the sign it brings good luck to me. I raise my hands towards the sky because I know that is where God is. I am calling God to be on my side and to help me. (Rene)*

Given that luck is an essential element in determining success from the viewpoint of footballers, religious holiness or rituals are seen as a pre-condition for attaining good luck. This explains the usefulness of religious or superstitious rituals to elite athletes.

One group of participants believed success is determined by a multiplicity of factors, including luck, hard work and superstition:

*Apart from physical preparation prepare mentally too, just in case...is not only superstition, I pray, believe in my God and believe in hard work (that is very important). If you sit down and pray to God and you don't work, it will not perform. If you pray and work hard that is the only means in which you can succeed. You need to work and fight for it and with God behind you everything will be fine (Junior)*

The belief that they can influence their success through supernatural means can cause athletes to develop and maintain superstitious and religious rituals. Players turn to religion and superstition as a logical alternative in their quest to seek meaning in career failures too.



## **Perceived outcomes of superstitious and religious rituals**

The notion that the execution of superstitious and religious rituals bears some kind of psychological adaptive and maladaptive function for athletes engaging in them was enshrined by interviewees. It was noted that rituals serve a lot of functions to athletes:

*To be lucky you have to take your training serious and pray for luck. I also pray to prevent injuries. So the prayers are very important to me; they help me to protect myself against charms from my opponents and help me to perform. It makes me feel stronger and ready for action. In a game situation, it makes me feel I have protection against the unknown and whatever my opponents do, they can't overcome me in the spiritual realm. Because of my prayers I feel mentally strong and no matter what my opponents do, I know I have a stronger shelter in my prayers. My prayers give me self-belief in my abilities and confidence to play without fear. I don't know any other sources of confidence, with the exception of prayers, so I derive my confidence from God through my prayers. My water washing ritual helps to calm me down when I am tense before games. I believe that when I pray over water and wash my face with it, it breaks down any charm or spell that anyone might have cast on me. The water will cleanse me and protect me against any evil attacks.*

(Amaoko)

*I know it has an impact on my performance. I know that my prayers before games really help me, through my God protecting me from injury. I perform well and sometimes I win and lose, but I know it's part of the game. It has an impact on my career. I pray for success, good luck and everything before the game....it's very effective in my career*

*because it protects me from injury and sometimes win. So it is a very important part of my career.* (Mendy)

Some of these quotes give credence to the assertion that ritual behaviours serve as a means of coping with career stressors. These proactive superstitious and religious rituals represent an athlete's effort to keep 'bad forces' away and bring in 'good forces'. These behaviours allow athletes to gain control in a threat state. By extension, it was expected that athletes with proactive superstitious and religious rituals would have a higher chance of progressing smoothly from a threat state to a challenge state.

*I pray for luck. I know luck can change things because if you are lucky, things go well but without it things go very bad. I do pray for luck because I know is a contributing factor.* (Yusif)

However, it can also be contended that these rituals may not only serve beneficial functions but can also be maladaptive, depending on the means of acquisition. For example, when athletes visit a spiritualist (Mallam) for spiritual support but fail to follow the right procedures, it has negative consequences on the athlete's focus during competition. The slightest mistake is attributed to errors in the completion of the routine and can create doubt over the athletes' technical abilities. They can also be maladaptive when they are imposed on the individual; more so when the individual's personal beliefs are in conflict with the new ritual to which he has been introduced to.

*The black magic has its own negative consequences that is why sometimes you will hear some witch doctors say they are the cause behind a club's poor run because they failed them their charges when they consulted them. Prayers to God do not come with such*

*demands. The black magic superstitions don't have a future but the prayers do and are very helpful. (Amoako)*

*....initially their superstitions help them, but getting to the later part of their career, things worsen for them. Personally, I will say it is not good to practise it. (Mendy)*

*I played for a team that practiced a different religion, in Israel. The team president was a Jew, most of the players practise the Jewish religion and most of these practices were in contradiction with my religion. I believe that if you follow the black superstition what we called (juju), it may give you immediate results in your favour, whatever you want, but getting to the end it might not help you, you may be disgraced. (Yusif)*

Rituals become dysfunctional when they place many physiological and physical demands on athletes:

*It is difficult, especially during the fasting period and the league season. You need to arrange with the team, but it is the career that puts food on the table. Sometimes we will want to do it but it is difficult, because you can injure yourself while playing with your fast. (Junior)*

Superstition has the potential to destroy team cohesion and unity when it is used against teammates competing for the same position:

*My worries about the use of superstitions currently is the spell that players you are competing for positions in the team. The danger is that, they've used these spells to destroy the careers of others. (Sam Ink)*

On this basis, an athlete poised for action and basking in a state of challenge may retrogress into a threat state due to imposition of a ritual that contradicts his personal beliefs. Ritual imposition can lead to self-doubt and eventually low self-efficacy and other negative emotional states associated with threat states. When a ritual imposed on an athlete is contrary to his or her traditional customs, dissatisfies their social expectations or violates their norms and religion, it may create cognitive dissonance, which in the long run will defeat the motive behind the novel ritual, which is alien to the player.

*Sometimes when you fail to engage in them, what the team officials will say about you and the labelling, so you just do it not to incur their wrath. So I just do them to appease them, but it is not that I believe in them. (Mendy)*

### **Coping strategies**

Elite athletes develop a range of cognitive and behavioural coping strategies that they use to manage stressors that they encounter during their competitive career (Scanlan, Stein, & Ravizza, 1991). Some participants adopted religion, problem focus and social support as strategies to cope with career difficulties:

*This has helped build me spiritually because there are some games where you can see things (juju or voodoo) that people have done; even though you were physically strong upon entering the game venue, you start feeling physically weak. But now with my fasting, prayers and bible reading, I am doing great. I start secret training to improve upon areas in which I may be lacking. Mentally I don't let it break me down because the call up can come any time. (Amoako)*

Where participants had not been used to problem focus and other psychological means of coping effectively with their stressors, religious coping was the most popular strategy that participants relied on:

*I have always trusted my God and knew it was simply not my time. I remember there was a time that I was dropped by a coach, he gave me a lot of explanations for not selecting me, I accepted it in good faith and I was not angry. I wished the team good luck and...I prayed to God to grant me strength and power to be fearless. (Sam Ink)*

In a threat state, where participants encountered negative emotions and anxiety, religious rituals provided the escape route to a challenge state. Participants had few opportunities to talk about their career difficulties to others who might share the experiences, and due to language barriers and cultural differences in a foreign land, social support from immediate family members was not an easily accessible strategy. Occasionally friendships were formed within the team, leading to social contacts, and some participants derived a sense of support from teammates.

*I focus on myself and hug my colleagues. (Kev)*

Participants were used to handling the tension and pressure associated with football, and coping with these stressors. In such high-stress environments, a tap from a colleague was deemed to be very helpful, especially before the commencement of the game.

It was evident that players believed superstition and religion works as a coping mechanism. It provides a feeling of control over the uncontrollable. When uncertainty, strong competition and stress pose a threat to perceptions of control, the participants attempt to regain control through the use of superstitious or religious rituals:

*My prayers, (.02) help me a lot. I can quote from the Holy Book (Bible), if you could remember, it got to a point that Moses had lost all hope, he prayed to God; that enabled him to use his walking stick to open up the Red Sea. Any time I am going to a game I ask my God to remember the covenant that I have with him and my offerings in the Church to bless me. Because of my belief in God or my religion, when such things happen I pray to God, saying if it's your will that I shouldn't start this game, may your will be done, and if not, let thy Grace be felt. So I don't normally attribute it to the coach. (Sam Ink)*

### **Response to others' ritualistic behaviour**

Some athletes developed and maintained their ritualistic behaviour in response to what their colleagues or opponents do. This represents how athletes deal with ritualistic opponents and teammates' ritualistic behaviour. While some preferred to use self-focus in dealing with others' rituals, others were of the view that superstitious rituals has the tendency to induce fear and intimidation. With regards to self-focus, those who adopted this strategy relied on their religious or superstitious rituals:

*I have prayed against spiritual forces that will seek to undermine my progress, hence I don't mind the millet seeds, pig water and other things that they will sprinkle on the field. I see it as something that they want to use to intimidate me. I only focus on what I have done and what is in mind, hence the millet seeds and their other rituals have no influence on me. (Amoako)*

*I just focus on my prayers before the game and I know God is more powerful than anything that they are doing. That is why I don't even look at them. (Mendy)*

*I don't have interest in what my opponents choose to do. I focus on myself and what I think will do to enhance my performance and ways that will let my team win. I know the God I serve is the greatest of all gods. So I don't worry about my colleague's ritualistic behaviour that I don't subscribe to. (Sam Ink)*

*Everybody has their own way of dealing with pressure or the stress associated the game. I just try to be myself and don't pay attention to what they are doing but I just try to be better than them. (Mitch)*

*I know he is also praying for luck, and I know I have luck on my side, so we have to see who has more luck. (Rene)*

Those who lack the resources to deal with other ritualistic behaviours experience negative emotions such as fear and intimidation:

*In junior leagues it used to create fear and panic in me. Now that I am playing professional football, I have matured religiously, as a man and in life. (Yusif)*

The evidence from this study suggests that athlete's responses to others' ritualistic behaviour can be broadly categorised into two ways. That is, they perceived it as either helpful or unhelpful to their pre-game preparations.

In general, a positive perception of such rituals, as reported by elite footballers, can lead to the development and sustainment of superstitious rituals. A positive interpretation of ritual exhibitions by colleagues or opposing athletes may results from an athlete's perception of control over the environment and self, and sufficient positive belief to cope, and that he can

overcome such rituals. A negative perception may result in a threat state, where negative emotions and anxiety are present.

### **Facilitative and debilitating interpretation**

Some of the players described facilitative and debilitating situations when they were sharing their superstitious and religious experiences in their career. Their responses reiterated the tenets of TCTSA. There were some occasions where players used superstitious and religious rituals to attain a challenge state, while their failure to deal with opponents' rituals and stressors of their career might have resulted in a threat state.

### ***Self-efficacy***

Self-efficacy beliefs are judgments of what an individual can accomplish with his/her skills (Bandura, 1986). Self-efficacy is an important aspect of the resource appraisals because an athlete's belief that they have the skills necessary to successfully execute a course of action can lead them into a challenge state. Some athletes rely on superstitious or religious rituals to attain this self-efficacy to cope with the demand situation:

*My prayers give me confidence to play. (Mitch)*

His reason for using religious rituals like prayer to gain confidence might be linked to gaining control. Self-efficacy is associated with perceived control because individuals need to believe that they are in control, and can intentionally execute their actions, for self-efficacy to develop (Bandura, 1997).

However, one player who doubted supernatural means as source of self-efficacy:



*Self-confidence is more about a good mentality than superstition. I was taught by my coach to use self-talk, I talk to myself to gain confidence and there is no supernatural link. You get the ball, you think God is going to help you to make the shot I don't believe in that. I think it's more about self-confidence. (Je)*

Je is Ghanaian; he was born in Europe and is playing there, and has never played in Ghana. His account demonstrates how environmental predisposition can influence one's sources of confidence; this was a technique he learnt from his coach after previous attempts with prayers didn't yield desired results for him. It can be inferred that he was socialised in an environment (Europe) where less prominence is given to religious interpretations of life events.

### ***Perceived Control***

Perceived control refers to the beliefs of an individual about how much control is available. Experiences of control refer to the feelings of the individual in the situation, and are a product of external conditions, subjective interpretations and individual actions. In finding ways to gain control over the risk of injuries, referees and coaches' decision and other external factors, some participants relied on their religious beliefs and luck in such difficult times:

*I don't have control over injuries, because I don't know the intentions of my opponent players. And that is why I pray, to prevent them. (Kev)*

*No. Injuries just come. You can't control it. If someone has in his mind to hurt you, you can't know and you will not know how to stand to prevent him from kicking you. Injuries just come. (Mitch)*

*I think that I cannot prevent injury because in football you will always get injured. I think if you are strong you can prevent more injuries, so you have to train the body well....I just play smart, I dodge bad tackles or jump from bad challenges. I don't go 100% for such balls. (Rene)*

Perceived low control over injuries in the game runs through all the participants interviewed, but means of gaining control in such situations vary. As some will rely on luck to prevent injuries, others prefer to pray. Rene's account gives credence to his personality as an internaliser who attributes success and failure to himself in such situations.

***Performance and avoidance approach:***

Performance approach (PAp) goals reflect a motivation to be seen as more competent than another person. If an individual aims to perform better than someone else, believes he has the skills to do so, and has sufficient perceived control over the situation, then PAp should be associated with a challenge state.

*I know if I start a game and I don't perform, I know I will lose the trust the club and my teammates have in me. The trust will diminish and if it continues for two, three times then it means you are losing your position. (Yusif)*

*I know the kind of profession that I have chosen. It is my hard work that will take me far. So it is the seriousness with which I prepare for games and my prayers that will give me success. I know a mistake can cost me my position in the starting team. Loss or defeat is something that everybody wants to avoid, so I will say yes I am afraid of losing; if I pray it*

*increases my chances of winning, and it is because we want avoid defeat that we engage in rituals most often. (Amoako)*

Amoako recognised that for him to demonstrate competence in his profession, hard work is not enough, hence the addition of prayers to his preparation before games.

### ***Emotional states***

There are two main foci about athletes' emotional responses during challenge and threat states. First, how the valence of the emotional state differs, and second, whether the emotional state is perceived as helpful or unhelpful for performance. The TCTSA proposes that positive emotions will typically be associated with a challenge response and negative emotions will typically be associated with a threat response.

*Yea, I am still thankful to my God that I am playing my professional football outside Ghana. At least I am still in the European system, and at the start/end of every season, I receive offers from clubs; that alone tells me that there is something I am doing right and I am making progress. Without the national team, I am still making some positive progress.*

(Yusif)

Athletes who perceive their anxiety symptoms as helpful to performance reported more positive feelings (e.g., excitement, relaxation, satisfaction, pride) and vice versa. In spite of all the difficulties that the participants might have gone through in their career, they are still grateful to their Creator or Supreme Being.

### ***Positive/Negative interpretation of anxiety symptoms***

A positive interpretation of anxiety symptoms results from an athlete's perception of control over their environment and self, sufficient positive belief to cope, and that the goal can be achieved (Jones, 1995).

*I didn't like it at all but it was also a challenge to make me mentally strong. A lot of players were also on the bench but I stayed and that means I am mentally strong. (Je)*

*It can affect your career but it is also good for your career. Then you work hard to come back, you work hard to be healed again. That is the positive point of being injured, you work harder to be fit and faster. That is the positive point but it can affect your career. (Mitch)*

*I was injured for three to four months. I didn't see it as the end of my career. Because I knew that if I get better, I will be stronger than before. (Rene)*

Participants also emphasised the extent to which they tried to see the positive in difficult situations. Most participants had developed specific strategies to 'positively reinterpret' negative situations to 'overcome' the effects of difficult career situations. The majority of these strategies involved the use of superstitious or religious rituals or teachings. These include sayings and stories from their holy books. The availability of these strategies was seen as ensuring that at least one was cushioned in a threat state and able to migrate to a challenge state to face the rest of his career. This is where majority of the participants relied on superstitious rituals as a coping mechanism or a secondary control strategy. The most important element of using religious resources seemed to be the resulting positive effects on their confidence.

## *Anxiety*

In elite football one can conceive of situations in which negative emotions, such as anger and anxiety, abound. The reason for this may be determined by the individual's level of appraisal of the situation and the definition given to it. Negative appraisal of the situation will characterise a threat state:

*The media will hype it and the fans are interested in such games; it makes you extra careful in other not to commit any mistake. In such games it makes it difficult for you to move freely. Being extra cautious makes you panicked, anxious and nervous. (Amoako)*

This high-intensity anxiety and anger that can serve motivational functions would therefore be clearly consistent with a challenge state, when the individual has a strategy to deal with it (Vyse, 1997). In such states of fear or panic, most of the participants engage in a religious or superstitious ritual to navigate a threat state into a challenge state. This state of fear can cause athletes to search for solutions, but their inability to resolve it with their physical abilities or instrumental control makes them resort to superstitious and religious rituals as a buffer to cope with their anxiety:

Another prominent feature from the interviews was that anxiety and nerves are common before big games, and may be associated with a challenge state. Competing at such an elite level, in which the outcome is uncertain, against opponents who are also trying to win, is demanding and unpredictable. In short, the conditions for anxiety are present in most competitive sport settings, and because even a challenge state can include recognition of the potential for loss and uncertainty, anxiety can be experienced in a challenge setting

when the athlete recognises it and adopts an appropriate strategy, be it mental or supernatural.

Table 9: Summary of Themes and Examples of Raw Data Extracts for Superstitious Experiences, Challenge and Threat States

Superstitious experiences, threat and challenge states	No. of participants	Players playing in Ghana	Played in Ghana & EU	Gh. Born & playing EU	Selected quotes from participants
<i>Challenge states</i>					
Performance approach	8	1	3	4	I know the kind of profession that I have chosen and it is my hard work that will take me far. So it is the seriousness with which I prepare for games and my prayers that will give me success. I start secret training to improve in areas where I may be lacking. Mentally, I don't let it break me down because the call up can come any time. <i>I trust myself and I don't fear anybody on the field of play, We are all playing with the same ball. If you are afraid of injury then don't play football.</i>
Perceived control	2			2	just play smart, I dodge bad tackles or jump from bad challenges.
High self-efficacy	5	1	1	3	My prayers give me belief in my abilities and confidence to play without fear. Before the match I will say to myself I am the boss. I don't believe in superstitions; those things are rubbish, putting water in shoes and so on. It can't in any way influence my performance. It's more about self-confidence. I talk to myself to gain confidence and there is no supernatural link. My prayers give me confidence to play.
Positive interpretation of anxiety symptoms	7		3	4	<i>I see injuries as a challenge but not an end of my playing career. I am not afraid of injuries at all and it can affect my future call ups into my national team.</i>
Positive emotions (pride, satisfaction)	5		2	3	I am not happy at that moment but after I have to be strong and fight for a place in the next game. <i>I didn't think it was going to affect my call up to any of the national teams. I am very happy, we are very young, we can only continue to work hard.</i>
<i>Threat States</i>					
Perceived low control	7	1	2	4	Why will the coach select player A or B ahead of me? It hurts sometimes but what can you do. It is mainly by accident, as a goalkeeper there is always the

					possibility of clashing with the attacker and this may result in injuries... I can't control the referee's decisions. I don't have control over it, because I don't know the intentions of my opponent players. And that is why I pray to prevent them. <i>If you know he is the boss on the field, you just have to obey him.</i>
Negative emotions (discomfort, dislike, despair, grief)	<b>9</b>	1	4	4	You know, as humans, it gets to a point that we give up. That injury was something that I had never experienced in my life. It was during my stay home, when I look at my colleagues playing and I can't be there with them, it was then that I keep asking myself, can I recover and be active like I used to... <i>I didn't like it sitting on the bench.</i>
Low self-efficacy					
Avoidance focus	<b>2</b>	1	1		If I pray it increases my chances of winning, and is because we want avoid defeats that we engage in rituals most often. I know if I start a game and I don't perform, I know I will lose the trust the club and my teammates have in me. The trust will diminish, and if it continues for two, three times then it means you are losing your position.
Negative anxiety	<b>6</b>	1	2	3	I know a mistake can cost my position in the starting team. So I've been praying, if I am short of any technical competencies or if it is any bad omen, I am praying to put a stop to it. The media will hype it and the fans will take interest in such games, it makes you extra careful in order not to commit any mistake. In such games it makes it difficult for you to move freely. Being extra cautious makes you panicked, anxious and nervous. <b>Sometimes, without any reason, I become timid or inactive, and I don't even where that comes from. I become inactive, slow and doleful, and so on. When the game gets under way, it's all gone, it may be there for the first few minutes but it vanishes later on</b>
<i>Uncertainty</i>					
Injuries	<b>8</b>	1	4	3	In a competitive situation you can't play it cautious...normally I think about when a colleague gets an injury. That is when you start thinking about it, ahh this can happen to me too. It is also because of my prayers that I have enjoyed His protection from injuries. It doesn't mean that it won't happen. I know that the Lord is protecting me. If it happens it doesn't mean He didn't listen to my prayer, it is just something that will happen. I think that I cannot prevent injury because in football you will always get injured.



Team selection	3	1	2		You know our type of profession, even if not a rival team, your own teammate that you are competing with for a position can harm you. When the game is an important match, which we need win at any cost, I will join the team to do all forms of rituals, so that I can also be part of the victory.
Outcome of the game	3	1	1	1	You can't always have success, you can see that in everybody so if there is a failure, I will always thank God, I will always thank Him because football is something that sometimes you win and sometimes you lose, so if I pray it isn't a guarantee that I will win. Whatever the score is I will always thank the Lord for what he has done for me.
<i>Coping strategies</i>					
Social support	1			1	<i>I focus on myself and hug my colleagues.</i>
Problem focus	4	1	1	2	Mentally, I don't let it break me down because the call up can come any time.
Religious coping	6	1	2	3	You can say, oh Lord you didn't listen to my prayers, but that is not it. My Lord can choose to use injuries to test my faith in Him. <b>I have always trusted my God and knew it was simply not my time. I remember there was a time that I was dropped by a coach, he gave me a lot of explanations for not selecting me, I accepted it in good faith and I was not angry. I wished the team good luck...it got to a point that Moses had lost all hope, he prayed to God; that enabled him to use his walking stick to open up the Red Sea.</b> <i>The Bible says, you have to pray every day. If you are injured you can pray for healing.</i>
<i>Determinants of success</i>					
Mental	5		2	3	Maybe I was not fully focused and the mentality wasn't right. Some people say bad luck but I don't believe in it.
Physical preparation	8	1	4	3	
Luck	6	1	4	1	If I don't win then it is bad day for me. On such days I normally will say luck wasn't on our side. I pray for luck and protection. You can be lucky in football, but I will give it, say, 80%. Luck can influence your performance if you have it but sometimes in the whole match you don't get luck and you have to depend on

					yourself. My prayers help me a lot, because I pray for luck. I know luck can change things because if you are lucky, things go well, but without it things go very bad. <b>Luck really counts in the football association. There are some players who are really talented yet they can't make it big even locally, let alone go abroad.</b>
Superstition	3	1	2		Water washing ritual helps me to calm down, when am tense before a game If I wear a boot and I don't perform well with that boot, I will not play with it. I believe in superstitions, I won't lie.
<i>Sources of superstition</i>					
Socialisation process/ primary relationship	7	1	5	3	So she made me grow to believe that it is only God who can help me on this Earth, my parents and she can't even help me, only the Supreme Being. We have to pray to gain luck from that place. It is something we were all initiated into by our seniors and our predecessors. Praying is a family thing that we been brought up with, so it is more or less part of us now. Is part of me and my football life. I pray before and after training and matches.
Obedience to authority	4	1	2	1	Before games officials of our team bring objects, various forms of liquid solutions, for us to bathe with or wash our feet in. I don't have any belief in them but I have do it because we are in a group and all other teammates are doing it.
Conformity	5	1	3	1	Everybody is doing it in the group, so I must do it as a member of the group. We all have one purpose, so if they are all doing it I must also do it. <i>Maybe I will join with the praying but I will still use my self-talk.</i>
Previous behaviour	3	1	2		<b>Maybe it is just something that you did once and you performed well, so you just have to continue.</b>
Half-beliefs	4	1	2	1	I don't have any belief in them but I have do it because we are in a group and all other teammates are doing it. Practically, you might see him doing something that you think is evil, but secretly you are not aware of what he might be doing, or what his faith is? Yea I believe in Allah, but I also know that the opposite side also exists, it all depends on the individual and what his is belief is. Some people will have their own belief but I may never know what is behind that faith. <i>Maybe I will join with the praying but I will still use my self-talk.</i>
Religiosity	8	1	5	2	I give alms, fast and seek to abide by the commandments in the Holy Scriptures. The Bible says you have to pray every day. If you are injured you can pray for

					healing. There are too many Muslims in the team, they normal suggest we form a straight line and face the sun, like they normally do in the mosque. The Christians normally form the circles to signify that they are one and there are no cracks in the team.
<i>Personal control</i>					
General external control	<b>6</b>	1	1	4	I know, we deserve the defeat; that is why we lost. If am not successful then it means I didn't work hard enough. But in victory, I know that I worked harder and it was by the grace of God. In defeat I don't attribute it to bad luck or anything. I don't say that maybe God didn't listen to my prayers. All I know is, we deserve the defeat; that is why we lost. <i>He would like to play through the middle of the field to the striker and score or something. It wasn't his fault; he didn't like my style and not my personality.</i>
Exaggerated internal control	<b>1</b>			1	<i>I will say to myself, I am the boss. I don't believe in superstitions; those things are rubbish.</i>
God-mediated control	<b>8</b>	1	4	3	The need for me to pray for luck, protection and favour to enable me perform well in a game. I believed in only prayers. I know that without God I can't make it in life. I pray to God that he should let me be hard-working and protect me from injury, for a win and to commit the whole team to him, to prevent any injury. I pray for the whole team because it takes a team to win, an individual can't win it.
<i>Perceived outcomes of superstition</i>					
Dysfunction	<b>4</b>	1	3		<b>My worries about the use of superstitions currently is the spell that players you are competing with for positions in the team can use to harm his own teammate. The danger is that they're used to destroy the careers of others. Currently these arts exist with us. With superstition or voodoo in the game, you can gain all that you need in the game but your ending is always sorrowful or miserable.</b> It is difficult, especially during the fasting period and the league season. You need to arrange with the team, but it is the career that puts food on the table. Sometimes we will want to do it but it is difficult, because you can injure yourself while playing with it.
Functional	<b>9</b>	1	5	3	if I pray it increases my chances of winning, and it is because we want avoid defeat... my belief is that when I pray over the water and wash my face with it on the pitch, it breaks any charm or spell that anyone might have cast on me...the

					circles signify that they are one and here are no cracks in the teams. My opponent is praying for a win and if I also pray for a win, who is God going to help? I can pray to God to protect me from injuries but I don't think I will pray for a win. I don't pray for luck and I don't pray before a game, my prayer for protection from God is part of my prayers when I go to church or am in my room. <i>I feel really good anytime that I do them and am able to play well too, but I don't know why it is like that. When I do them I feel good and comfortable.</i>
<b><i>Response to others' ritualistic behaviour</i></b>					
Fear and intimidation	<b>2</b>	<b>1</b>	<b>1</b>		They will seek to undermine my progress, hence I don't mind the millet seeds, pig water and other things that they will sprinkle on the field. I see it as something that they want to use to intimidate me. You know, in our type of profession, even if not a rival team, your own teammate that you are competing with for apposition can harm you.
Self-focus	<b>8</b>	<b>1</b>	<b>3</b>	<b>4</b>	I only focus on what I have done and what is in mind, I just try to be myself and don't pay attention to what they are doing but I just try to be better than them.

**NB:**

**Normal** = players playing in Ghana

**Bold** = born in Europe and playing in Europe

**Italic** = *played both in Ghana and Europe*



## Discussion

This study examined how elite footballers developed and maintained superstitious rituals, and when these rituals become useful in their professional careers. The study used portions of the Theory of Challenge and Threat States in Athletes (Jones et al., 2009) to explain superstitious experiences of elite footballers' careers and to examine when and how superstition and religion become evident in their career life. The findings revealed that the socialisation process, conformity, obedience to authority, reinforcement, half-beliefs and religiosity are the sources for the development and sustainment of superstitious behaviour. It was also revealed that superstitious rituals can be both functional and dysfunctional to the athlete, depending on their sources. It was evident that the mode of acquiring a ritual can influence the cognitive, personal and situational characteristics that dictate challenge and threat appraisals of the athletes. These findings imply that practitioners should respect elite footballers' rituals and integrate them into their coping strategies and secondary control strategies. It also discourages the imposition of rituals on athletes by officialdom.

All participants were able to describe a range of specific ways in which they were initiated into the use of rituals, and how they have either discontinued or continued their use throughout their football career. The present findings relate to the previous research and the TCTSA by providing evidence to support other explanations for elite footballers' engagement in superstitious and religious rituals, as illustrated in Figure 1. These rituals and athletes' social backgrounds inform their demand appraisal of potential stressful situations. The environment athletes were socialised in determines the control strategies available to them in a threat state.

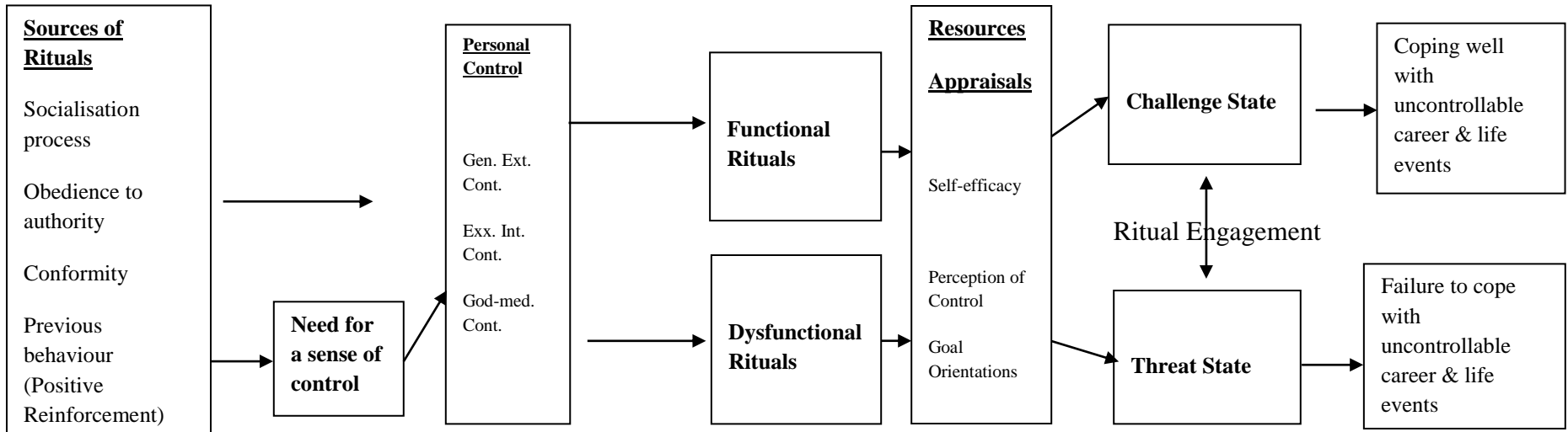


Figure 1: A conceptual model of origins and perceived outcomes of superstitious and religious rituals in threat and challenge states

These results at least testify to the fact that the level of superstitious and religious rituals engaged in by elite footballers are in part a function of that individual's broader cultural environment. One of the controversies in the study of sports rituals involves how they are developed and maintained by athletes throughout their career. Some researchers, such as Maller and Lundeen (1933), argue that superstitious rituals are socially transmitted by social agents such as family and friends. The present study confirms the "social suggestion" as the most cited source of belief, followed by "parents or elders" (Conklin, 1919). Maller and Lundeen's (1933) findings ranked friends first and home second in order of fostering superstition. Conklin (1919) method has come under criticism from Plug (1976) because of the methodology used in determining participants' superstitious beliefs. The present findings were consistent with Maller and Lundeen's (1933) and Conklin's (1919) findings that agents of socialisation play an important role as sources of sports rituals. This suggests that participants' superstitious and religious rituals were socially transmitted through direct instruction and social learning, as illustrated in Figure 1.

In retrospect, it was realised that some players may have developed and maintained these rituals through other psychological processes, such as the socialisation process, reinforcement and uncertainty, which will be addressed subsequently. The present findings confirm Vyse's (1997) assertion that the socialisation process is an important determinant of early superstition and psychological forces like conformity and obedience to authority, and the links of superstitious behaviour to instrumentally conditioned responses by Skinner (1948, 1953; Vyse, 1994; Ono, 1987). These were all processes that informed how participants developed and maintained their rituals. Clearly, the current findings indicate that the socialisation process, conformity and obedience to authority may lead to the development of rituals.



However, some participants in the current study reported psychological discomfort and negative feelings in relation to rituals to which they have to conform. For some of the participants, acting superstitiously would constitute a greater threat to faith, but to avoid being alienated from the squad in the next game, they will engage in the ritual to conform, but not because they believe in it. A situation where an athlete engages in a ritual but denies its effectiveness or his belief can be termed a half-belief. This contradiction between a ritual engagement and a belief or disbelief was another source of ritual development. This finding partially supports Campbell's (1996) idea that many people in modern society can be said to hold a 'half-belief' in superstition, as there is a discrepancy between practices and their professed beliefs. It can be suggested from the present findings that these discrepancies have the potential to cause psychological tension or discomfort for the athlete. It can be suggested that rituals that are practised by athletes can serve functional purposes, while those that are imposed on them by authority figures can be dysfunctional to their careers. Rituals that serve functional purposes may move an athlete from a threat state to challenge state, while those that serve dysfunctional purposes may either deepen an athlete's state of threat or shift the athlete from a challenge state to a threat state, as shown in Figure 1.

Participants' accounts were viewed as a confirmation of the widely held belief that superstition is common among footballers of African descent. The majority of the players identified with a ritual at least at one point in their careers. This widespread use of rituals among elite footballers parallels Burger and Lynn's (2005) findings among baseball players. Consistent with the uncertainty hypothesis (Burger & Lynn, 2005; Wright & Erdal, 2008), the results demonstrated that religious or superstitious rituals were associated with perceived success in coping with stress. Professional sports

provide bedrock for the development of superstition because of the uncertainty regarding injuries and the outcome of the game, and the seeming lack of control over coaches' decisions regarding team selection in football. Professional football is determined to a large extent by uncontrollable forces (i.e. luck or chance); players appear to be doing what they can to lure some of those uncontrollable forces to their side. It can be inferred from the present findings that activities with a high failure rate would be more strongly associated with superstitious behaviours than activities with a low failure rate. Gmelch (1972) shares this inference, that superstition is an anxiety-reducing mechanism closely allied with difficult and uncertain activities. Players reported that ritual engagement increases during the last training before team selections are done and just before games. These factors lead footballers to engage in religious or superstitious rituals. The players need to achieve a challenge state where they can experience positive emotions, high self-efficacy, a high sense of control and a performance approach. In their view, these rituals are prominent facilitators in achieving a challenge state.

Most of the participants exhibited ritualistic behaviours which are mediated by a belief in God. This finding contradicts Burke et al.'s (2006) findings that athletes who believed less in God utilised fewer superstitious practices. This contradiction might result from the different socio-cultural backgrounds of the participants involved in the two studies. As has been established earlier, the impact of socialisation processes on beliefs systems cannot be underestimated. The clear distinction between the two studies is that the participants attributed the source of their rituals to their religion. Also, it was evident that the reason why some athletes engage in a ritual contrary to their religion was due to conformity, obedience to authority and half-beliefs. The benefits of an

increased sense of control include increased optimism and enhanced confidence, both of which have been shown to improve task performance (Bandura, 1997). This provides partial support to the TCTSA, which predicts a challenge appraisal is more likely if the athlete possesses high levels of self-efficacy—a more specific form of self-confidence (Bandura, 1977). Through the enactment of superstitious rituals which influence how a situation is appraised, an athlete could learn to reappraise the stressful scenario as a challenge rather than a threat. Self-confidence differences are consistent with Cumming et al.'s (2007) suggestion that imagery-inspired confidence can protect against debilitating interpretations of anxiety by maintaining high levels of self-confidence or allowing athletes to perceive symptoms as controllable and facilitative. So is it that superstitious-inspired confidence can create a challenge state compared with an athlete who has low confidence and is likely to experience a threat state. When athletes are aided by their superstitious rituals to alter their interpretation of anxiety symptoms from debilitating to facilitative, with a strong belief in the source of the ritual and its efficacy, this can result in an improvement in performance for the athletes. Such a facilitative interpretation of anxiety symptoms by a superstitious athlete will occur when individuals appraise a situation as a challenge, whereas a threat appraisal will result in more debilitating interpretations when the athlete doubts the source of the ritual. It is therefore suggested that superstitious rituals can protect against debilitating interpretations of anxiety by maintaining high levels of self-confidence or allowing athletes to perceive symptoms as controllable and facilitative.

The present study supports Schippers and Van Lange's (2006) claims that athletes in threat states or experiencing psychological tension are likely to engage in superstitious behaviour. In keeping with prominent theoretical models of superstition (Malinowski,

1948; Burger & Lynn, 2005), superstitions and religious and magical beliefs have been evident in situations of low perceived control, uncertainty and stress; these can be equated to TCTSA threat states. In athletes' resource appraisals, they relate to their ability to cope with the demands of a situation, and include skills, knowledge, abilities, dispositional factors (e.g., self-esteem, sense of control) and external support available to them (Blascovich, Mendes, Tomaka, Salomon, & Seery, 2003). Participants of the present study engaged in rituals because in their appraisal of the situation they believed it would help them to feel confident and gain a sense of control.

The study must be viewed in the light of a number of methodological limitations. It would be helpful if future studies could adopt methodologies that can incorporate participants' physiological data, such as heart rate, to enrich the data. The debate would have been richer if how athletes responded physiologically to challenge and threat states was included. This is a limitation, and in the future it may be important to focus on a particular league, specific cultural orientation and how dysfunctional sports rituals evolve. In qualitative research, small sample sizes are typical because the objective is to provide in-depth accounts of individual experiences, and generalisations across a population; hence, the sample size used may not be a limitation.

Furthermore, participants were mixed in terms of age, playing experience and background. Given the highly individual nature of the development of superstition and religious rituals and the construction of appraisals and coping strategies, it may be important to consider whether coping strategies differ significantly among different sub-groups of people with similar demographic information; for example, according to age, number of years playing professional football or ethnicity. This could form the

focus of future studies. However, in accordance with the purpose of the study, the findings provide detailed descriptions on how elite footballers may develop and maintain their rituals.

Consistent with Malinowski's (1948) original claims, the majority of the participants engaged in a ritual when faced with a stressful situation. These results suggest that religious or superstitious rituals may (and are perceived by players to) reduce anxiety when stressors are unpredictable and uncontrollable (threat state), and are commonly called on as a coping mechanism. A possible explanation for activation of a ritual could be due to the cognitive appraisal of the situation. There were instances where participants experienced psychological discomfort and negative emotions due to rituals that were imposed on them. In such situations, athletes may experience a threat state. The threat appraisal might have been influenced by the athlete being made to conform to superstitious rituals, whereas a similar challenge appraisal may result from personal enactment of superstitious or religious rituals.

Future studies should investigate the factors responsible for the ultimate assessment of a ritual. Future research should determine if athletes who engage in rituals out of conformity will derive perceived benefits, or if the rituals will serve as dysfunctional. In a threat state, where there is low perceived control and low self-efficacy, these rituals serve as mediating factors to enhance the players' perception of control and self-belief. However, it can be suggested that this might occur because superstitious rituals containing characteristics reflective of a challenge (e.g., facilitative perceptions of anxiety) can produce performance improvements.

In conclusion, results from the current study indicate that superstitious or religious rituals can be effective in altering an athlete's appraisal of a stressful situation. Athletes'

activation of superstitious rituals in a stressful situation can alter their perception of a potentially stressful event which may be harmful to psychological well-being and performance. A threat-appraised state is likely to emerge through imposition of superstitious ritual, and has the potential to produce debilitating interpretations, whereas a challenge appraisal (activation of personal superstition) can lead to facilitative interpretations of responses experienced. It was identified that ritual imposition without reference to the athlete's personal beliefs systems can be stressful, and can lead to negative emotions, which supported assumptions of the TCTSA. However, imposition of team rituals that are in contradiction with the athlete's personal belief system can create psychological discomfort, which opposes existing literature on the psychological benefits of superstition (Becker, 1975; Damisch et al., 2010). Nevertheless, superstitious rituals can be used by athletes to alter their stress appraisal and produce more facilitative interpretations of responses, resulting in more adaptive coping strategies.

## CHAPTER 7: STUDY 4

The general design of Study 4 was similar to that of the previous study, except that this study focuses on superstitious behaviours within a team in relation to the TCTSA. Study 3 confirmed the functions of superstition and religion in threat and challenge states. It revealed how conformity and obedience to authority can lead to the development and maintenance of superstitious and religious behaviour. Further, it confirmed previous research that speculated that athletes use superstitions to reduce anxiety, build confidence and cope with uncertainty (Dunleavy & Miracle, 1979; Neil, 1980; Neil et al., 1981; Womack, 1979). It is also consistent with Schippers and Van Lange's (2006) claims that the benefits of superstitions might stem from reducing psychological tension in athletes, enhancing the probability of them reaching their ideal performance state (IPS, Garfield & Bennet, 1984; Williams, 1986). These positive psychological functions are likely to propel the athlete to experience a challenge state.

However, the present study focuses on dysfunctional consequences of superstition in sport that are likely to induce a state of threat for an elite athlete within a team environment. It emerged from Study 2 that engaging in superstition can serve as a secondary control strategy in threat state and from Study 3 that superstitious rituals are not always beneficial and can cause feelings of guilt when athletes engage in a ritual that is in contradiction to their personal beliefs. Such feelings of guilt can result in religious stress (Loewenthal & Lewis, 2011), psychological discomfort and cognitive dissonance (Festinger, 1957). There is an association between religiosity and measures of guilt and obsessionality, particularly in religious/superstitious traditions that encourage scrupulous and detailed observance of religious/superstitious rituals, such as some forms of Roman Catholicism, Judaism and Islam (Loewenthal & Lewis, 2011).

These feelings of guilt have the potential to negatively influence an athlete's perception of control, self-efficacy and goal orientation, which can lead to the development of a threat state.

Not much is known about the individual experiences of athletes within the team regarding cognitive dissonance and half-beliefs in relation to conforming to the team's superstitious rituals. The present study follows on from Studies 2 and 3 but focuses on the individual within the team. This study dwells mostly on the psychological consequences of superstitious behaviour on an individual within a team, and their impact on an elite footballer.

The scientific study and acceptance of superstition and religion has been slow to emerge in sport psychology literature. This is despite extensive study in our parent discipline, psychology (e.g., Richards & Bergin, 1997, 1999; Shafranske, 1996), and the recent founding of the "positive psychology" movement (e.g., Aspinwall & Staudinger, 2003; Seligman & Csikszentmihalyi, 2000). The positive psychology movement views religion and superstition as having an important role in fostering excellence in human activities and enhancing health and well-being.

Research into the origins and causes of superstitions has been done by Pasachoff et al. (1970), who include belief in the power of prayer among their superstitions, and Salter and Routledge (1971), who regard belief in prayer, a Supreme Being and a personal God all as superstitions. Although this tendency has the advantage of simplicity, this is only supported in anthropological and cross-cultural studies (Plug, 1976). Frazer (1890) believed that both religion and superstition were faulty attempts at understanding and controlling life events. However, whenever there is contradiction in any of these beliefs, psychological discomfort is likely to be experienced. These negative psychological



consequences can lead the athlete to appraise the situation as a threat state. Following a threat appraisal, negative emotions are likely to occur and are likely to be perceived as harmful to performance (Skinner & Brewer, 2004).

Dissonance is likely to happen when two beliefs or items of knowledge do not fit together; that is, if they are inconsistent. For example, an athlete who is Muslim and is made to engage in Christian rituals will experience dissonance with respect to his religious beliefs. Dissonance produces discomfort and, correspondingly, pressure to reduce or eliminate the dissonance will arise. When attempts to reduce dissonance associated with conformity to superstitious team rituals are not successful, the athlete may experience a threat state. The athlete may try to change one or more of the beliefs or behaviours involved in the dissonance, to acquire new beliefs that will increase the existing consonance and thus cause the total dissonance to be reduced. In such a situation superstitious beliefs can result in a challenge state.

The present study focused on elite athletes' conformity to beliefs that are in contradiction to their personal beliefs and also half-beliefs (McKellar, 1952). Half-belief refers to a contradiction between a statement of belief (or, as in this case, disbelief) and conduct. Garwood (1963) suggested that the term is applied to those who deny being superstitious, yet still admit to carrying out superstitious rituals. Participants were also of the view that their religious acts may be seen as superstition by onlookers.

More specifically, superstition serving a dysfunctional role in athletes' careers emerged as a pivotal point in the previous study and chapter. Equally, the notable absence in the literature of studies of elite athletes' usage of superstitious rituals piqued the scientific interests of the researcher. What are the psychological functions and dysfunctions of superstitious rituals to an athlete in team sports? What are the consequences of

conforming to superstitions imposed by officialdom, teams, coaches, tradition, etc.?  
What are the likely consequences of conforming in superstitions to team sport athletes?  
Do half-beliefs contribute to the development and maintenance of superstitions among elite team sport athletes?

It is suggested that conforming to superstitions and half-beliefs is likely to influence athletes' cognitive appraisal of situations. It is anticipated that the negative consequences of imposing rituals on athletes by officialdom may reduce athletes' self-efficacy, perceived control and approach goals, resulting in a threat state. The purpose of this qualitative investigation was to explore the role of superstitions in team sports and issues of half-beliefs and cognitive dissonance among elite team sport athletes in relation to superstition usage.

Given that superstitious rituals can potentially create unique obstacles to sport scientists during their consultations for the team dynamics, and given the lack of research examining athletes' perceptions of superstitious rituals in team sport settings, the purpose of the present study was to examine athletes' perceptions of (a) the role of superstitions in team sports and issues of half-beliefs, (b) negative psychological consequences experienced by elite team sport athletes in relation to superstition usage (c) to determine the inadequacies of previous research on elite athletes.

It was necessary to first categorise emergent superstitious behaviour inductively instead of forcing a predetermined theoretical structure on them. This is because this allows the participants' responses to emerge, creating their own themes.

## **Method**

Since a continuation of thoughts and actions was being studied simultaneously, a qualitative research design was used to elicit the superstitious behaviour and the theories of half-beliefs and cognitive dissonance, following the guidelines of Patton (1990). The present study adopted a similar method and data analysis to the previous study.

Qualitative analysis was adopted in examining superstitious processes in team sports. Crocker et al. (1998) contended that interview questions can clarify the personal and situational considerations that influence individuals and their choice of coping methods. One reason for the use of qualitative research is that it allows for understanding of superstitious behaviour through the athletes' perspective. Hence, a qualitative design seems well suited to the description and understanding of the complex issues associated with superstitions in sport. This is particularly helpful in sport because so little is known about team sport athletes' experiences of cognitive dissonance and half-beliefs in relation to conforming to their team's superstitious rituals.

### **Participants**

Ten elite team sport athletes participated in this study. They consisted of one volleyball player (male), one ice hockey player (female) and eight footballers. Of the ten participants, one was a female and of European origin. All the nine men were of African origin. The participants' ages ranged from 23-33 (mean age = 22.4 years, SD = 1.4 years). All participants were competing in elite leagues in their respective sports. These participants were selected because of their experiences at the elite level, where there is high risk, uncertainty and a high need to achieve. This environment traditionally

serves as a fertile breeding ground for superstition (Schippers & Van Lange, 2006). Because of the salience of international competitions in the lives of these athletes, I believed that they would be likely to conform to officially imposed superstitions to avoid de-selection. All ( $n = 10$ ) of the players had previous experience playing at the international level, either in junior national teams at international tournaments or on senior national teams. There was an overlap in this study, as three (3) participants from the previous study were added to the present study analysis. Three participants from Study 3 were included in the present study because, in the analysis of their data, issues of half-beliefs and cognitive dissonance emerged prominently, and they met all the selection criteria set for the present study. Hence they were added to obtain a total of ten participants ( $n = 10$ ) for the present study.

## **Instrument**

The guide comprised a series of open-ended and guided questions that were developed based on previous research on elite footballers (Ofori et al., in press). This was done to minimise researcher bias and ensure that participants were asked identical questions in the same order (Patton, 1987). The interview guide was strengthened through four pilot interviews conducted prior to the investigation with individuals with relevant experience (e.g. university football team players and hockey players knowledgeable in sport science). Feedback obtained from the pilot interviewees, as well as critical appraisal by the investigators, was used to evaluate and revise the interview guide to ensure clarity and comprehensiveness. Further, the evaluative information was also used to refine the interview's skills. In particular, to avoid biasing participants' responses I adopted a neutral, impartial stance in efforts to probe answers (Backstrom & Hirsch-Cesar, 1981).

## **Procedure**

Superstitions are often very personal practices and beliefs; as such, many people are not ready to report them to just anyone. As Neil (1982) suggested, the interviewer has to be well known by the athletes, and they should have confidence in the interviewer if detailed information is to be obtained. To satisfy this condition, participants were first contacted by phone, and subsequent visits were undertaken to create the needed rapport. I attended a couple of their training sessions and games, and this helped me win their trust. They were informed of the nature of the investigation and asked to participate. A time for an extensive interview was declared with the athletes who agreed to participate. They were sent a copy of the question guide before the interview so they could familiarise themselves with the types of questions that would be asked.

All interviews were conducted by myself and lasted an average of 75 minutes. I have training in qualitative research methods and previous experience in using qualitative research methods at both undergraduate and postgraduate level. I have followed team sports for the last decade and hence am familiar with team process, team sport terminology and circumstances. I conducted all the interviews, and this allowed for consistency across interviews. The interviews were tape-recorded and later transcribed.

The ethics committee of the Department of Sport and Exercise Science, Aberystwyth University, approved the study, and it was stressed to all participants that their involvement was voluntary. Standard informed consent procedures were completed by all athletes.

## **Data Analysis**

The first part of the data analysis was the same as in the previous study (see pages 147-152).

I assumed that the experience of engaging in superstitious rituals would be influenced by participants' socialisation history, and they would actively seek to gain control in the sporting environment, where uncertainty abounds. I also assumed that people who have been coerced into engaging in superstitious rituals would be able to provide meaningful accounts of their experiences as an essential precursor to attempts at psychosocial intervention and to formulate policies about it. It was essential to hear the voices of players who had been coerced into engaging in superstitious rituals to ascertain if those rituals can also serve some psychological functions or dysfunctions to the athlete.

## **Results**

An overview of categories, subcategories and themes that were inductively and deductively derived from the data analysis, together with an idiographic breakdown of each participant's responses within each category, are provided in the data matrix (Table 10). The results are divided into three distinct main categories pertaining to (a) situations leading to superstitious development and maintenance, (b) the functionality of sport superstitions and (c) psychological malfunctions associated with superstitions in sport, as presented in Figure 2.

*Table 10: Data Matrix of Participants' Responses*

ID	Belief in Superstition			How Superstitions are Developed and Maintained					Functions of Superstition				Dysfunctions of Superstition			
	Prayer and Religious Rituals	Lucky Charms	Team Rituals	Social Learning	Conformity	Reinforcement	Stress and Anxiety	Uncertainty	Confidence or Self-belief	Coping mechanism	Good Luck	Protection	Thought Dissension	Over-reliance on Charms	Team Alienation	Self-doubt (Half-beliefs)
1	+	+	+	+	+	-	+	-	-	-	+	+	+	+	+	+
2	+	+	-	+	+	-	+	-	+	+	-	+	+	-	-	+
3	+	+	+	+	+	-	+	+	+	+	+	+	-	-	+	+
4	+	+	-	+	+	-	+	+	+	-	+	+	-	-	-	-
5	+	+	-	+	-	-	+	+	-	-	-	+	-	-	-	+
6	+	+	-	+	-	-	+	-	-	+	-	-	-	-	-	+
7	+	-	-	+	+	+	+	+	+	+	+	-	+	-	+	+
8	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	+
9	+	+	+	+	+	+	+	-	-	+	-	-	-	+	-	+



10	+	+	+	+	-	+	-	-	+	+	-	+	+	+	-	-
<i>n</i>	<b>10</b>	<b>9</b>	<b>5</b>	<b>10</b>	<b>7</b>	<b>3</b>	<b>9</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>8</b>

*Note.* The plus sign (+) indicates the presence of a player's response in the category.

The minus sign (-) indicates the absence of a player's response in the category.

***Belief in Superstitions:*** These are rituals and routines that are backed with magical beliefs.

*I think that the power or the spirit that is protecting me is greater than the one that he possesses. I don't even bother myself with what someone believes in and what he does before a game.*

***Prayer and religious rituals:*** All participants engaged in prayer or a ritual they believe is essential to their sports success. For example, P2 thought of these rituals as a complement to physical preparation that gives him luck:

*After everything you need to pray, see your spiritual leaders to pray with you. For me it affects my performance positively, greatly it does. At the end of all my physical preparation I have to pray, for luck on the pitch.*

P4 noted that the positives and opportunities that these rituals create for him: *“Is the prayers that will enhance my performance. It is through the prayers that God will open opportunities and chance in football for me. I pray on my own, for luck or an opportunity for selection and professional contract”.*

***Lucky Charms:*** Nine (9) of the players believe in luck and subscribe to rituals or activities that can bring them luck. This subcategory was characterised by players' comments that gave credence to luck and hard work; as P2 said, *“I think determination and hard work are the most important; with these, luck will follow, as sports has an element of luck. My superstition has to do with luck.”*

This was echoed by P3: *“I will say hard work and luck counts a lot in football. Because you need to work hard to take the chances that luck brings to you”.*

There were others who rated luck as the most important factor in their sports: *“I can be lucky in football, but I will give it, what? Luck? Say 80%”* (P4).

However, one group of the players believed in luck but rated it low in terms of how it can contribute their success:

P5: *Luck exists, but I believe Allah is the one who gives it. ... luck is the smallest of things that contribute to winning. As you have prayed for luck, your opponents must have also done the same, so on the field of play it is your determination and your fitness that will determine how you will perform. I will say luck counts for only 30%.*

P6: *I say 20%....like the saying goes, God helps those who help themselves. I think determination and hard work are the most important; with these, luck will follow, as sports has an element of luck...work hard and, with determination, luck too will follow.*

**Team Rituals:** Five (5) of the players discussed rituals that were not specific to them but were for the team. P1 explained how these rituals are done:

P1: *We will perform rituals and incantations and so on. They bring the substance and concoctions to us to sprinkle in our boots and so on.*

In addition, P3 elaborated on the process of these team rituals and how he will go the extra mile to perform his personal superstition: *“There are times that the instruction from above will indicate that we should enter the field of play with our backs. Some come in the form of ‘don’t use the boots you used for the warm-up for the game’, and many others. These are team rituals that you can’t exempt yourself from, but in addition I will do my personal ritual”.*

P3 offered a real-life experience that he had experienced, and its impact:

P3: *So there is a ritual that they have to perform, so they took the entire team to the cemetery minus the Muslims in the team. There was a ritual bath for all the Jewish players in the team before and after each training session, and they also drank water provided by the rabbi. Could you believe that, the remaining eight games we didn't draw a single game and we even won against all the big clubs in the league, even in their own backyard. We won all those matches and we moved from the relegation zone.*

### **Sources of Superstition Acquisition:**

***Social Learning:*** All the participants learned their superstitions from social sources, which included family members and their teams. For example, P3 acknowledged his orientation towards religious rituals as playing a critical role in developing superstitions: *“I said earlier, in my childhood days that is how I was brought up. It was part of my socialisation processes and is part of my orientation.”* The influence of friends in acquiring superstition was evident in some players' stories, as P1 noted: *“...your friends can encourage you to do it.*

***Reinforcement:*** A coincidental relationship between a desired outcome and routine backed by magical beliefs can influence superstitions. This reason can be seen in a third of the raw data themes. An excellent example of reinforcement emerged when one athlete discussed how he maintained a ritual that the team officials introduced him to. P10 stated *“when I did it the first time, it gave me the desired results, and that is why I have continued to do it. At times when I pray, I know that the game is tough, but it helps me to perform better”.*

***Conformity:*** This subcategory reflected situations where team superstitious practices are forced on players. Seven (7) of the participants had experienced the need to conform

to team rituals in one way or another. This was based on the raw data themes signifying their involvement and why they engaged in them. These are evident in the quotes below:

*P1: The team rituals I was introduced to by my previous club officials made me sustain my superstitious. But my faith changed when I started school and my regular attendance at Sunday school”.*

*P2: They gave me a lucky charm (millet seed) and it didn't work for me. I won't use it again. This lucky charm given to us before games is similar to what happened last Sunday, when we were made to attend a Christian church service. As these are team's norms and culture, I joined the rest of the team to perform the rituals but I don't believe in them. Whatever they asked me to do I will do it, as I am a member of the group.*

*P3: Before games, officials of our team bring lucky charm objects (cowries) and various forms of liquid solutions (Florida water, six flowers) for us to bathe with it or wash our feet in them. I don't have any belief in them but I have to do it because we are in a group and all the other teammates are doing it...during the game, once you keep on making mistakes, you start to think and attribute those mistakes to the charm that was given to you.*

The above quotes demonstrate that players even had to conform to superstitious practices that were initiated by the fans and not club officials.

### **Situations or Conditions that Elicit Superstitions:**

***Stress and Anxiety:*** Nine (9) of the players reported that stressful situations and anxiety led them to engage in a superstition.

P5 commented upon stress associated with injuries and negative occurrences in the game “my prayers protect *me from injuries and other negative occurrences, and grant us win. I pray at home, I pray and recite a Koran verse on the field before kick-off.*” P7 went further, saying, “*When things are not working you try to explore all possible avenues but superstition may not be the last resort*”.

As P2 explained, “. *With the prayers for injury prevention you pray for yourself and the team so that nothing will happen to cause the other team’s victory. I pray for good luck, to avoid injuries.*

Others were of the view that they engaged in them to avert negative situations: “*I pray against any thing that can affect my career negatively*” (P1).

Similarly, P3 stated, “*We pray in the hotel to break any forces there, those in the bus and everywhere we will set foot before kick-off. Once we cleanse ourselves of any bad omen, any new place we set foot on, we have to pray to gain luck from that place. It is something we were all initiated into by our seniors and our predecessors*”.

The players also shared their nervous moments and how they handle them:

P6: *I saw all their stars and I started thinking what is it that I can do that these senior players can’t do. I was scared and I kept praying within me and the game was good for me.*

P8: *I also pray before big games. Sometimes I become nervous before big matches against very good teams. It is not like fear but you want to play good, you know. You want to do everything to prove to people who are watching you that you are a good player, you don't want to do something wrong.*

The universal truth is that superstitions are practiced even when there is an element of risk. P5 said, *"I pray to God that he should protect me from injuries and other negative occurrences, and grant us a win. I pray at home, I pray and recite a Koran verse on the field before kick-off. Most of the time I pray that God should grant me luck, protect me from injury and help my team to win, apart from that I don't believe in anything"*.

P10: *I pray before the game so that I won't get injured. That is my most important prayer, because in the game situation a lot of things can happen.*

***Uncertainty***: Six (6) of the participants admitted that due to the unpredictability of the sports that they are involved in they try to gain a sense of control by activating a superstitious ritual. For example, P4 expressed his concerns about uncertainty concerning team selection: *I will train the whole week, but yet I am not sure if I will start the next game. In such situations I can only pray to gain favour from the coach"*.

P3 explained how and when players are most likely to engage in superstitions:

*I will pray because a lot of things are involved in the game, including injuries, bad luck and many more. If you will pray to God that you are going into a game, he should protect you from injury and any unforeseen circumstances, hence the need for me to pray for luck, protection and favour to avert these indefinite situations. If I pray it*

*increases my chances of winning, and it is because I want to avoid defeat that we engage in rituals most often.*

The players desire to control luck and uncertainty levels, which are higher when the game is of relative importance to the players.

## **Functions of Superstition**

The functions of superstitions were found to be most often reported among players who openly declared their superstitions. All the players interviewed for the study gave at least one reason why superstition was or has been helpful to their career. It was evident that players used superstition for various reasons which serve functional purposes. This was reiterated by P2: *“My lucky charm (red bracelet) has helped me in a positive way, so if people can perceive it from the athlete’s perspective they will understand us the more.”*

***Confidence or Self-belief:*** This subcategory focused on players’ claims that their superstitious practices serve as a source of their self-confidence. It was mentioned by six (6) of the players:

P3: *Because of my prayers I feel mentally strong and no matter what my opponents do, I know I have a stronger shelter in my prayers. My prayers give me self-belief in my abilities and confidence to play without fear. I don’t know any other sources of confidence, with the exception of prayers, so I derive my confidence from God through my prayers. It makes me feel stronger and ready for action.*



P10: *When I pray, I get some kind of encouragement, I feel like I can do this and that. Sometimes it's a really tight game and I have been praying, I get a feeling that go ahead and do this skate, go ahead I am with you.*

**Coping mechanism:** This was the most frequent subcategory within the main category of functions of superstition, mentioned by seven (7) of the players, and was cited across the board irrespective of the importance of the game or the level of play. Coping mechanisms involved the use of superstitious practices as a strategy to deal with pre-game anxiety, injuries, de-selection and other stressors associated with their career. This was reflected in comments such as the following:

P3: *I spoke with grief and pain, by the grace of god I regained my fitness. I see my recovery as a miracle, because of my prayers and tears.*

P6: *If I fail today I will just say "Thanks to Allah". Because if you failed today, Allah knows the reason why he made you fail.*

P7: *I pray before games, I accept any results that come out because I know that is what my God has granted me. Irrespective of the outcome, be it win or defeat. So my prayers help me to adjust and adapt to any results that come my way. Psychologically it makes you fit, and it eliminates fears. It helps us to find reasons for any outcome of the game, be it good or bad it has made me a successful volleyball player and made me strong to accept any result that comes my way. It has made me very disciplined both on and off the field.*

**Good Luck:** It emerged from the data that about five (5) of the participants engaged in superstitions to bring good luck or to gain good omens. They were of the view that their profession can be a bit unpredictable, hence their reliance on superstitious practices to

prevent bad luck. It was cited as a major motivating factor that led them to engage in superstitions. This subcategory is described below. The following quotations reflect these processes of gaining luck.

P3: *I will pray for good luck (good day) in the game. The national call up is something that I am seriously praying for luck, to enable me make the squad in future... any new place we set foot on, we have to pray to gain luck from that place.*

P4: *I pray for success and good luck before the game.*

P7: *I pray for success and good luck.*

**Protection:** Protection from injuries and other risks associated with their sport reflected the player's superstitious practices. Cited by six (6) of the players and accounting for about 70% of the raw data themes, most of the participants engaged in superstitious practices to gain a sense of protection. P3 explained, "*If you will pray to God that you are going into game, He should protect me from injury I also pray to prevent injuries, and lastly I will pray for good luck (good day) in the game...simple and easy, already I have prayed against spiritual forces that will seek to undermine my progress... In the team it is easier for your colleague to cast a spell on you than an outsider, since an outsider will need to solicit for personal information about you but your team has easy access to any information about you. So it is during the training that you have to pray for protection from injuries, spiritual harm or charms from teammates and favours from coaches. So it is easier for your colleague to harm you than an opponent who does not have access to your clothing and equipment*".

P2 reiterated, "*We pray to prevent injuries...With the prayers for injury prevention you pray for yourself.*

It was evident that superstition played a role in team cohesion, as P4 elaborated, “*I pray to commit the whole team to him, to prevent any injury. I pray for the whole team because it takes a team to win, an individual can’t win it. I do the sign of the cross for God’s protection.*”

## **Dysfunctions of Superstition**

Superstitions may be both functional and dysfunctional to the athlete and may have negative consequences on team dynamics. These dysfunctions appear in almost all the participants’ interviews, including those who alluded to the perceived benefits that they have derived from superstitious practices.

***Thought Dissension:*** This happens in a situation where the player holds two cognitions regarding beliefs that are inconsistent with each other, and thus experiences a negative motivational state. The apparent contradiction between an individual’s personal belief and that of the team’s superstitious practices may give rise to cognitive dissonance. This was cited by five (5) of the participants and accounted for over 36% of the raw data themes on the negative consequences of superstition. An example of this psychological discomfort and cognitive dissonance was captured by P7: “*I feel bad, because you are forced to do certain things that you don’t believe. It was very difficult. It was like I have to go to church and join my team afterwards. The game was played in the afternoon. The protocol surrounding it makes it a bit difficult because every individual has his own way of going about it.*”

There was also the issue of game times clashing with players’ times for worship or religious activity, which also created some psychological tension for the players. This

was stated by P2: *“Sometimes it is not easy; there are times that game times clash with the times that I have to say my prayers, but in that case I have to sacrifice prayers for the game”*.

***Over-reliance on charms:*** In examining the interview transcripts, a prominent feature among three (3) of the participants’ responses was that there was a reliance on superstitious practices at the expense of technical and physical aspects of the game. This can have far-reaching consequences on both athlete performance and spiritual well-being. These were captured in the following comments from the participants:

P1: *It will work for you today and may fail you some other time. It will reach a point in time that you can’t play because you don’t have that charm on you.....what? Will be centred on it, at the moment that charm stops working, then it means you can’t perform. When you fail and you attribute it to superstitions it will prevent you checking what you are supposed to do right. Once you dwell on superstitions as the cause of your failure it blinds you to assessing your mistakes. You engage in it in the negative, when it fails? It exposes your sporting competencies and the end result is often shame.*

From the above comment it is obvious that superstitions can also blind those who engage in them from objective and careful analysis of their performance. They also prevent athletes from analysing their technical performance.

***Team Alienation:*** This refers to the separation of a player from the team process due to their failure to comply with team superstitious practices. Three (3) participants shared their experiences of being an outcast in their team.

P7: *I feel bad, because you are forced to do certain things that you don’t believe in, and in that sense it can hinder team cohesion or teamwork. If you refuse to engage in team*

*rituals, you are sometimes denied team selection or even expelled from the team's camp.*

As captured by P7, he was made to conform to a ritual he did not believe in, and as result he suffered a certain degree of de-selection.

***Self-Doubt (Half-beliefs)***: The majority of the players (80%) indicated that they had engaged in superstitious practices that they still question.

*P2: Once it is the team's norms and culture, we went to perform the rituals but I don't believe in them.*

*P3: I have to do it because we are in a group and all the other teammates are doing it... in the course of the game, when I make a mistake, I start thinking it's what I have engaged in that I don't believe in.*

The above quotations reveal the state of participants when they don't own their superstitious practices and experience an element of self-doubt. This feeling of guilt and doubt can affect a player's confidence and mental preparation before and during games.

**Main category**

**Subcategory**

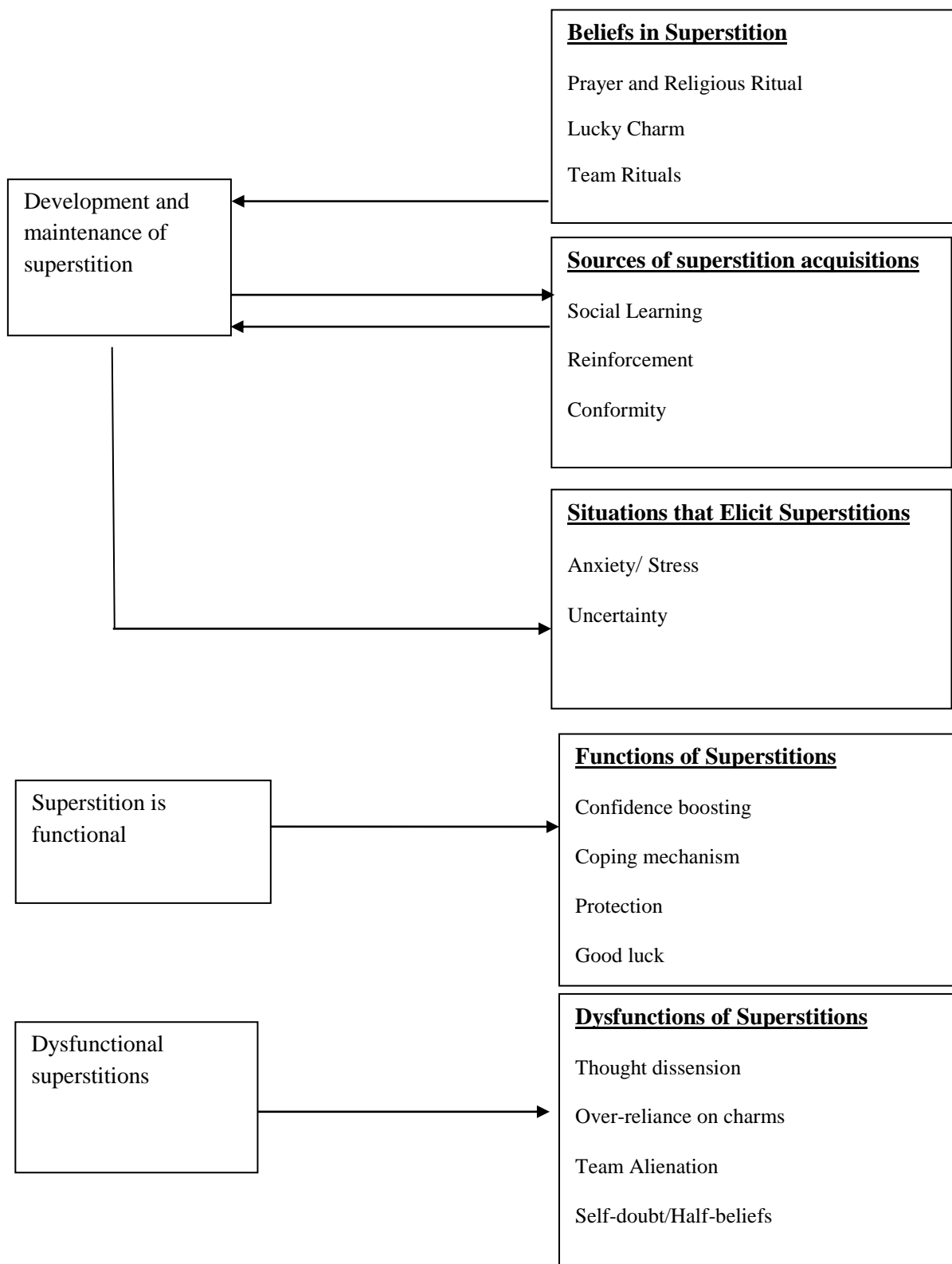


Figure 2: Athletes' superstitious experiences in team sports

## Discussion

The results of the study (a) revealed that social learning, reinforcement and conformity were prominent sources of superstitious and religious ritual acquisition and maintenance, and (b) highlighted a number of conditions where superstitious behaviours are most likely to appear. The results also suggest that superstition can be both functional and dysfunctional in team processes. These results support general assertions that superstition appears to arise from situations of uncertainty (Burger & Lynn, 2005; Felson & Gmelch, 1997; Vyse, 1997). The results also suggest that those who acquire their superstitious behaviour by means of conformity are likely to experience cognitive dissonance and other negative psychological consequences that characterise a threat state. Overall, the players' narratives indicated a process whereby their experiences with superstitious behaviour have been both functional (challenge state) and dysfunctional (threat state), as illustrated in Figure 2.

In terms of belief in superstition, the current findings are consistent with Ciborowski's (1997) and Bleak & Frederick's (1998) assertions that many athletes are superstitious. The present study supports Neil's (1982) claims that fear of the unexplainable, unpredictable and destructive forces of man's environment give rise to superstitious beliefs and overt practices to ward off impending danger and bring good luck (Maller & Lundeen, 1934). The present findings corroborate Womack's (1992) results that athletes were more likely to resort to superstition under highly stressful situations, and Bleak & Frederick's (1998) proclamation that superstitious behaviours are exhibited when athletes are faced with a combination of uncertainty about an outcome and a desire for control over that outcome. Based on Bleak & Frederick's proclamation and the current

findings, it can be suggested that superstitious behaviour occurs, particularly in times of uncertainty or stress, to serve a motivational need for control.

The athletes reported acquiring their superstitious behaviour through social learning, conformity and reinforcement. The study confirms Gregory's (1975) findings that social agents such as family, friends, school and the mass media were important sources of the transmission of superstitious beliefs. It can be argued that conformity complements social factors in athletes' development and maintenance of superstitious behaviour. Since superstitious behaviour and beliefs are transmitted via social interaction, they are reflected in human experiences within athletic organisations where athletes are made to conform to team rituals.

In this study, the acquisition of superstitious behaviour appeared to also follow fundamental laws of reinforcement, in line with Neil's (1982) claims that non-general-culture-based superstitions follow laws of reinforcement. Successful outcomes lead to the repetition of superstitious behaviours. Players are likely to repeat what has worked for them in the past despite the desired outcomes occurring independently of actual responding. The present finding supports Catania and Cutts' (1963) assertions that the maintenance of superstitious behaviour is the result of temporal contiguity. Temporal contiguity occurs when two stimuli are experienced close together in time and, as a result, an association may be formed. This study advances existing notions that coincidence has much to do with the development of a variety of superstitious beliefs and behaviours. It can be deduced from the present findings that continuity can influence elite athletes' learning of superstitious behaviours through an association of good results with a particular ritual.



There is little dispute that superstitious behaviour serves functional and important purposes to the athlete and the team as whole. Superstition may help to calm a player or make him feel protected in both difficult and dangerous situations, when they are trying to accomplish something. Given that athletes operate in an environment where injuries and other risks are likely, it is perhaps not surprising that players engage in superstition. The study lend support to Womack's (1979) findings that superstition allays anxiety and inspires confidence.

The present study supports an earlier suggestion that stress may increase the incidence of magical thinking (Malinowski, 1954; Keinan, 1994). However, the present results support the possibility that psychological stress and social pressure experienced by players were indeed responsible for the emergence of superstitious behaviour. The outcome could be explained in terms of conformity to team rituals and other psychological stressors that are associated with professional team sports.

Also consistent with the superstition research (Burger & Lynn, 2005; Wright & Erdal, 2008) was the uncertainty hypothesis in the present participants. The uncertainty hypothesis posits that magical rituals increase performers' sense of control in situations of uncertainty, which reduces anxiety and allows individuals to cope with their unpredictable conditions and successfully perform the high-risk tasks they face. Psychologists have actively explored the emergence of magical rituals and beliefs among diverse populations facing uncontrollable conditions, including gamblers (Bersab'e & Mart'inez Arias, 2000), consumers in the marketplace (Block & Kramer, 2009; Kramer & Block, 2008), test-taking students (Rudski & Edwards, 2007), targets of warfare (Keinan, 1994, 2002), puzzle solvers (Dudley, 1999), golfers (Damisch et al., 2010; Wright & Erdal, 2008), baseball players (Burger & Lynn, 2005), track and field athletes (Todd & Brown, 2003) and various other athletes (Bleak & Frederick,

1998; Schippers & Van Lange, 2006; Womack, 1992). The present findings extend the research trend in the area of superstitions by using elite athletes who perform under uncertain and unpredictable conditions where anxiety is a prominent feature.

It was evident in the present study that half-beliefs and officials' imposition of superstitious rituals on athletes are other sources of superstition development. Unlike the present study, Bleak and Frederick (1998) used college student athletes as their participants, whilst the participants for this study were elite athletes. Another important advantage of the present method is its multisided applicability, which gave athletes the time to share their experiences. Instead of creating only one specific and very restricted superstitious behaviour or belief questionnaire, as occurred in various superstitious studies (Becker, 1975; Bleak & Frederick; 1998; Rudski, 2001), the present method enabled participants to discuss their beliefs, how they developed and are maintained, and their functions. Thus, the research moves much closer to the phenomenon of superstitious behaviours that are common in real life compared to research examining rather artificial induced illusory beliefs (Matute, 1994; Rudski, 2001).

The present findings confirm a recent series of experiments that has shown that lack of control plays a critical role in the emergence of magical beliefs and perceptions of illusory patterns (Whitson & Galinsky, 2008). Moreover, the most frequently mentioned benefits of superstitious engagement were coping mechanisms. The chance element remains central to sport (Snyder & Spreitzer, 1978), along with how athletes cope with resulting pressure to succeed. It is this strong element of chance and the need to achieve that accounts for superstitious behaviour among athletes. When all the chance elements cannot be contained, superstition is a commonly invoked coping mechanism. Superstition may also be used as a justifying mechanism for defeat. Defeat can be attributed to a ritual that was ignored, incorrectly performed, that contradicts

personal beliefs and that the player was made to conform to, or to God. Failure can always be attributed to bad luck or unknowing omission of some seemingly irrelevant act (Becker, 1975; Neil, 1980; Wrigley, 1970). A feeling of bad luck before a sporting event may have a potential influence on the cognitive appraisal of an athlete. Such a feeling of bad luck may result in low self-efficacy, low perceived control and avoidance goals, which represent a threat state.

However, the study repudiates Neil's (1982) findings that superstition has a latent function that contributes to team morale and team solidarity (Wrigley, 1970). The findings of this study suggest that in a team situation where the team superstition behaviour is in contradiction with the individual athlete's religion or superstition behaviour, it can create team alienation. For example, there were instances where players were left out of the team for their failure to engage in team rituals. Conformity to superstitious rituals may also cause some level of anxiety to players who don't believe in the team rituals, and may cause a sense of doubt that can create diverse negative psychological consequences to the individual athlete and the team as whole. In such conditions, the individual athletes involved are most likely to experience a threat state.

Given that conformity plays a meaningful role in the development and maintenance of superstitious behaviours and the negative psychological consequences that were identified in the current study, the issue of half-beliefs is critical because it is central to superstition literature in the last two decades (Campbell, 1996). The players believed that their experience of doubt in a team ritual. And two cognitions (belief in their personal ritual and disbelief in the team ritual) that are inconsistent with one another may result in cognitive dissonance (Festinger, 1957). Based on the present findings, it can be suggested that imposition of superstitious rituals on athletes may create negative

psychological consequences to the individual athlete and can affect team cohesion. The present finding confirms Russell and Jones' (1980) suggestion that paranormal beliefs are of greater consequence to believers than sceptics. This is because those who believe in their rituals share positive psychological consequences associated with their beliefs, whereas those who doubt the source of the ritual experience negative psychological consequences. One possible explanation can be that superstitious and religious rituals may be beneficial to believers in team rituals. The sceptics, whose personal beliefs are in contradiction with the team rituals, may experience negative emotional arousal that can influence their demand appraisal.

In this study, it was evident that respondents who appeared to be in the 'half-believers' category experienced some dissonance. For example, conformity and self-doubt that emerged in the present investigation gave credence to the concept of "half-believe" proposed by McKellar (1952), and engaging in acts which mimic instrumentality under certain conditions does not promote self-belief, whilst at the same time disbelieving that their actions can, in reality, affect outcome (Campbell, 1996). For instance, some athletes were willing to imitate their officials when the team has suffered a series of bad results. It is suggested that half-belief is a situation or a kind of thought where athletes engage in a team ritual but internally reject the superstitious belief, yet allow it to influence their thinking and actions just to feel accepted in the team and to avoid reprisal.

The present finding contradicts Womack's (1982) observation that superstitious rituals are not common with practice games. Womack's findings indicated that superstitious usage was common when the game was of high importance to the athlete. This contradiction may be due to a difference in the playing levels and socialisation processes of the participants of the two studies. The present study participants were elite

performers who compete at the highest level, where the inherent competitiveness of athletes, the societal pressure to succeed and the desire for first team selection leads them to resort to superstitious behaviour even at training. This is to gain favours from coaches and to control other elements of uncertainty. The participants in the present study said that they engage in a lot of rituals in training, since this was when they needed to win the coaches' favour to gain selection.

There is great deal of scope for future studies in superstition among team sport athletes to build on the current findings and contribute to the expanding knowledge base. There is a need to differentiate between a religious ritual and superstitious behaviour, because there is a tendency for observers to describe an individual's religion as a superstition and vice versa. The specific form the behaviour takes should help to clarify whether it is of a religious or superstitious nature. An athlete who goes through certain rituals, dresses one side of the body before the other and wears a lucky charm is practicing superstition, whereas the player who says a prayer before a game may be considered to be practicing religion. There is a need for researchers to probe beyond the sources of the belief and its psychological consequences to the intention – whether a supernatural being is being invoked or it's just a sporting routine. If the athlete exhibits religious behaviour only while under stress in competitive situations, the distinction between religion and superstition is again in question. It may just be the case that the athlete is engaging in a religious rite which is normally based on faith, and not a superstitious ritual. The irony of the present study is that both serve similar functions for individual athletes, but in team situations can act as a dysfunction.

Ultimately, depending on the underlying sources of a superstition, engaging in superstition can serve as a secondary control strategy in threat states, it was evident in the present study that superstition can also be dysfunctional. The present study

concludes that while superstition offers psychological benefits, it can also create psychological discomfort. This discomfort is created by dissonance. It will be necessary to reduce or eliminate the dissonance.

There are some limitations to the current study. The players made connections between anxiety and their superstitious behaviour, but casual inferences cannot be made from the data presented here. Also, as with all qualitative research, the participants may have responded in socially desirable ways. Certain steps were taken in this study to minimise social desirability response bias and attribution error. First, all interviews were conducted by the researcher, who was neutral to the athlete's team officialdom. The researcher created an interview environment in which the players could speak openly about their experiences. Holding a superstition carries a pejorative taint if those athletes don't wish to admit to superstitious belief or behaviour. For similar reasons, player anonymity was assured. Second, players were given examples of elite athletes who have publicly spoken about their superstitious beliefs and behaviours, and this encouraged them to share their superstitious experiences without shame and fear.

In summary, the present study presents some psychological functions of engaging in superstitious behaviour which corroborate previous research findings pertaining to the functional benefits of magic and religious behaviour (Malinowski, 1948; Ofori, Lavalley & Todd, in press; Buhrmann et al., 1982; Becker, 1975; Bleak & Frederick, 1998). It went further, to establish that the source of the superstitious ritual is a major determinant of the type of psychological consequence, be it functional or dysfunctional.

## CHAPTER 8: STUDY 5

The previous studies have focused on sources of superstition and perceived functions and dysfunctions of superstitions behaviour. The present study will seek to test personal superstition and conforming superstition in an experimental setting. It has been observed that people are most likely to engage in superstitions when experiencing feelings of uncertainty, high psychological stress and low levels of perceived control (Keinan, 1994; Malinowski, 1954; Whitson & Galinsky, 2008). Interestingly, these same psychological attributes often accompany important performance-related situations (Sarason, 1984; Treasure, Monson, & Lox, 1996). In marked contrast to previous studies that have focused on antecedents of superstition, little is known about the consequences of superstitions. The current study will seek to investigate the effects superstitions have on behavioural outcome in a performance related context.

Researchers have speculated that engaging in superstitions regulates psychological tension and creates a feeling of control and a sense of predictability in otherwise chaotic environments (Keinan, 2002; Schippers & Van Lange, 2006; Womack, 1992). In Studies 1 and 2, it was evident that superstitious beliefs were evident across cultures and have correlates with measures of personal control, control strategies and coping mechanisms. It was also revealed in Studies 3 and 4 that while superstition has psychological benefits, it can also create psychological discomfort through cognitive dissonance. Reducing dissonance may influence discomfort and superstitious behaviour. Attempts, such as conformity, to reduce dissonance represent the observable manifestations that dissonance exists. The person may try to change one or more of his beliefs, opinions or behaviours involved in the dissonance to acquire new beliefs that will increase the existing consonance and thus cause the total dissonance to be reduced,

or may try to forget or reduce the importance of those cognitions that are in a dissonant relationship. This study is influenced by Studies 3 and 4, which were based on TCTSA (Jones et al., 2009) and the phenomenon of cognitive dissonance (Russell & Jones, 1980; Tsang, 2004), respectively. One tradition of attitude research and theory that is relevant to the current investigation is dissonance theory, as formulated by Festinger (1957).

Leon Festinger's dissonance theory is an account of how our beliefs rub up against each other, an attempt at a sort of ecology of mind. Dissonance theory offers an explanation of topics as diverse as why an athlete might not believe in a particular ritual but engages in it and why athlete engages in a ritual but doubt it source. The "dissonance" is between the athlete's engagement in the team ritual and their beliefs about themselves, as was evident in the previous study. In Study 4, the footballers wanted to avoid team alienation and to be seen as loyal and committed to the team's goals, yet they doubted the efficacy of the rituals they felt pressured to practice. Admittedly, there are lots of other social forces at work—obligation, authority, even attraction. Festinger's interpretation is that these things may play a role in how the athletes in Study 4 acted, but they can't be explicitly relied upon as reasons for engaging in a ritual that contradicts their personal beliefs. So there is a tension between their belief that they are loyal to the team and the knowledge of participation in an alien ritual. The present study is interested in investigating performance consequences when an elite athlete conforms to a team ritual which is not aligned with their beliefs.

In line with these findings from Study 4 that found 90 percent of all participants reported believing in superstition, at least to a moderate degree; for instance, believing that a lucky charm would actually help them in important situations. Interestingly, lucky charms have specific characteristics among other superstitions in that it is typically believed to be necessary to position the lucky charm close to the person or wear it close



to the body in order for the object to function as a good luck-bringing object (Vyse, 1997; Ofori et al., 2012). As done in past studies, the experimenter in this study activated superstition by linking the concept of good luck to the ball participants used during the task (Van Raalte, Brewer, Nemeroff, & Linder, 1991).

As described in the introduction, literature on the prevalence and development of superstitions has argued that the purpose of superstition is to regain a feeling of control and raise feelings of optimism and confidence. On a more theoretical level, all of these functions fit into the major tenets of the TCTSA.

This study proposed that activating superstitious thoughts and behaviours leads to better performance in a performance task when it is initiated by the performer, whereas it will lead to poor performance when it is imposed on the performer. Second, it sheds light on the psychological mechanisms that underlie the TCTSA, such as perceived control, achievement goals and self-efficacy contributing to the beneficial or unfavourable influence of superstition on performance.

Previous research has identified self-efficacy as a mediator for the observed superstition-performance link (Damisch, Stoberock, & Mussweiler, 2010). The present study sets out to extend the literature by more closely examining self-efficacy, perceived control and achievement goal orientation as mediators for superstition usage. Specifically, it aims to demonstrate that personal superstition heightened self-efficacy improved performance in the present context. Previous research demonstrated that two mechanisms allowing highly self-efficacious individuals to perform better than others are their tendency to set higher goals (Zimmerman, 1995) and to persevere longer in tasks (Bandura, 1986). This study was designed to explore whether these mechanisms

also contribute to the performance benefits of superstition or detrimental aspects of superstition.

Research on both sides of the hypothesised superstition-performance link suggests that perceived self-efficacy (Bandura, 1977)—that is, people’s belief in their abilities to overcome a threat situation—may play a central role in turning to superstitious behaviours to feel confident and to gain control; these can directly alter threat states to challenge states. In a challenge state, the perception of control and sense of high self-efficacy can yield observable performance benefits. On the superstition side, it has been demonstrated that belief in good luck is related to concepts associated with self-efficacy, such as optimism, hope and confidence (Darke & Freedman, 1997; Day & Maltby, 2003, 2005). The more people engage in their superstition, the more optimistic, hopeful and confident they tend to be. On the performance side, it is well established that next to existing abilities and skills, one of the most important and consistent predictors of people’s performance is their perceived self-efficacy (Bandura, 1997). The more confidence people have in their abilities to master a given task, the better they perform (Feltz, Short, & Sullivan, 2008; Stajkovic & Luthans, 1998). Explicitly, it is suggested that the activation of a superstition by participants prior to a specific performance task leads to heightened feelings of self-efficacy and perceived control toward this task, which in turn leads to better performance, while participants who are made to conform to a superstition prior to a performance task experience lowered feelings of self-efficacy and perceived control, which will have detrimental consequences on performance.

Specifically, performance enhancement in the context of a personal superstition, performance impairment in the context of conforming superstition, and the simultaneous influence (consequences of personal and conforming superstition) of both

superstitions on performance were the hypotheses that were tested. Participants' self-efficacy, achievement goals and perceived control, in addition to their performance, were assessed.

It was hypothesised that participants who activate their personal superstition or their lucky charm will have high self-efficacy and perception of control, which in turn would lead to higher self-set goals and increased persistence—both of which would improve their performance than the control group's. In the conforming superstition group, it was expected that participants will experience low control, low-self-efficacy and lower self-set goals, and these will impair their performance.

## Methods

**Participants:** 70 professional footballers from the Ghana Premier league were recruited as participants for the study, but 54 participants were used for the analysis. This was because the remaining 16 failed to turn up for the post baseline trial. The average age of the participants was 21.43 years old. The participants were male professional footballers in the Ghanaian league in the 2011/2012 season. They were randomly assigned to one of three experimental conditions after they signed the informed consent forms. They were contacted during their training and asked to participate in a short study that would last about 20 minutes. Permission was sought from the head coaches of the various teams.

In this study participants engaged in a penalty task in order to assess their motor performance. Prior to the penalty taking task, participants engaged in a personal superstition, conformed to a team superstition or engage in no superstition in a control condition. Applying the findings of Van Raalte et al. (1991) to this present study, the 'personal superstition' group competed against the 'conforming superstitions' group and the 'control group'. Using the lucky ball superstition, the experimenter presented the lucky football to participants in the conformity group to use for the penalty kicks. Those in the personal superstition group were reminded to activate their superstitions before the penalty kicks. Those in the control group were presented with their balls without any statement having any connection with superstition. The purpose of this control condition, in which no superstitious concept was activated prior to the penalty task, was to address the question of which of the two opposing superstitious concepts has the greatest effect on performance.

Participants were professional footballers playing in the elite division of Ghana's premier league. During the initial meeting, participants were invited to kick a size five football towards a range of targets (the highest score target was 10 and the lowest target was 2, while zero was assigned to those who missed the target). These results served as a baseline score for all participants. They were also asked to fill in a questionnaire pertaining to their belief in luck, perceived control, achievement goals and self-efficacy. The participants were randomly assigned to one of the three test groups—conforming superstition, personal superstition and control condition—irrespective of their responses on the baseline questionnaire. Participants returned to the laboratory in two weeks for a second trial. During this trial, individual performances within the team (experimental condition) were recorded. With the goal of assessing performance on a sporting task, participants engaged in the same football kicking task. The present study was a follow-up to findings from Studies 3 and 4, to find out which superstitions may be functional or dysfunctional to the athletes, depending on their sources. This study identified that participants who activate their personal superstitions prior to the task are expected to achieve a better result in the penalty task than participants who were made to conform to team superstition “conform superstitions” and the control group.

The number of successful kicks in the penalty task was taken as an index of motor performance. Instead of imposing the same superstition for all participants, participants within the conforming superstition team were presented with a lucky ball by experimenter. Research in the field (Albas & Albas, 1979; Becker, 1975; Gregory & Petrie, 1975) as well as in the laboratory (Van Raalte et al., 1991) has shown that applying the concepts of good or bad luck to equipment like a racket or a ball is a form of superstition that often occurs naturally, but can also be generated in a controlled setting.

**Measures:** Several judgments were collected concerning participants' perceived confidence, perceived control and achievement goals to determine challenge or threat states in response to a competitive football penalty kicking task between the teams. As posited in TCTSA, data pertaining to participants' self-efficacy, beliefs, perceived control and achievement goal orientations, as well as their physiological data (heart rate measurement), were also measured. These data served as a manipulation check.

**Demographic and Athlete History Information:** Participants provided their demographic details, including age, ethnicity and level of play.

**Self-efficacy:** A sport-specific self-efficacy questionnaire (Coffee & Rees, 2008) was used to measure self-efficacy. Participants rated a number of statements in relation to how they typically feel before an important competition. Additionally, participants answered a question based on belief in luck. The self-efficacy measure has internal consistency reliability values of  $\alpha = .88$  to  $.90$  in previous studies (Coffee & Rees, 2008; Coffee, Rees, & Haslam, 2009). Just before the penalty task, the participants were instructed to "indicate to what extent they felt confident that they can", followed by seven statements rated on a five-point scale (1 = not at all to 5 = completely). The internal consistency reliability of the sport-specific self-efficacy measure in the present study was  $\alpha = .62$ .

**Perceived control:** Perceived control was measured with three items based on the work of Meijen et al. (in press). These items were derived from Bonetti and Johnston's (2008) perceived control over walking measure and followed Ajzen's (1991) perceived behavioural control protocol and Conner and Sparks' (1996) locus of control protocol. Locus of control was measured using a single item, "Do you think it is entirely up to

you whether you perform to the best of your abilities”, rated on a five point scale (1 = strongly disagree to 5 = strongly agree). Perceived behavioural control was measured with two items, “How much control do you feel you have over whether you perform to the best of your abilities” (1 = no control at all to 5 = complete control) and “How difficult will it be for you to perform to the best of your abilities?” (1 = extremely difficult to 5 = not at all difficult). The perceived behavioural control items are in line with the theoretical framework of control (Skinner, 1996), where perceived control relates to the individual’s belief about how much control is available. In addition, the locus of control item sought to measure the means-end relation, which refers to the association between a cause and an outcome. This is because previous researchers of superstition have studied the phenomena in relation with locus of control. The internal consistency reliability coefficient of the perceived control measure was  $\alpha = .55$  (Meijen, Jones, McCarthy, & Sheffield, in press). Deleting any of the three items did not improve the internal consistency of the scale. Jones et al. (in press) further explore the scale; a principal component factor analysis was conducted and they found all three items were significantly correlated, with correlation coefficients between  $r = .22$  to  $.40$ . The internal consistency reliability coefficient of the perceived control for the present data measured was  $\alpha = .43$ .

***Achievement goals:*** Achievement goals were measured using the 12-item Achievement Goal Questionnaire for Sport (AGQ-S; Conroy, Elliot, & Hofer, 2003) to measure the four achievement goals in the 2x2 achievement goal model: Mastery-approach goals (MAp) (“It is important for me to master all aspects of my performance”), Mastery-avoidance goals (MAv) (“I am often concerned that I may not perform as well as I can perform”), Performance-approach goals (PAp) (“My goal is to do better than most other performers”) and Performance-avoidance goals (PAv) (“It is important to avoid being

one of the worst performers in the group”). The participants indicated the extent to which items were true for them in relation to how they felt just before the penalty task, on a scale from 1 (not at all true) to 7 (very true). Previous studies have provided evidence of the validity of the AGQ-S (Adie et al., 2008; Van Yperen, 2006). The internal consistency reliability coefficient values were  $\alpha = .58$  for MAp,  $\alpha = .88$  for MAv,  $\alpha = .84$  for PAp and  $\alpha = .86$  for PAv (Jones et al., in press). Jones and his colleagues explained that deleting any of the items did not result in an improved internal consistency for the MAp scale. A low internal consistency score for MAp ( $\alpha = .50$ ) has also been reported by Conroy, Cassidy and Elliot (2008). MAp is an important variable in relation to the other three goals (Conroy et al., 2008) and thus it has been decided to retain the MAp scores for further analyses, notwithstanding the low internal consistency reliability scores. In addition, the internal consistency reliability coefficient for the combined avoidance goals (MAp and PAp) and approach goals (MAv and PAv) was calculated in line with the TCTSA. The internal consistency reliability coefficient for approach goals for the original scale was  $\alpha = .70$ , and for avoidance goals  $\alpha = .84$ .

***Physiological tenants of TCTSA:*** Heart rate was measured by using a heart-rate monitor just after the penalty task. In addition, psychological tension was measured by asking the participants how they felt before the penalty task. This question was asked after the task: “How tense were you before the penalty taking task?” (1 = definitely not, 5 = definitely yes). These served as validation and manipulation checks. These also helped determine participants’ level of involvement in the task.

***Debriefing questionnaire:*** The debriefing questionnaire consisted of three questions that were based on the importance of the task; two questions were used to measure the extent of ego involvement and one question assessed participants’ knowledge of the real



purpose of the study (1 = definitely no, 5 = definitely yes). The last question assessed whether participants believe in superstition (Yes or No). These questions also served as manipulation checks and to find out if participants were aware of the real purpose of the study. Participants answered these questionnaires after the performance task.

## **Procedure**

70 participants

Session 1:

1. Demographic and Athlete History Information
2. Questionnaires
3. Baseline trial

Session 2:

54 Participants

1. Random assignment of participants into the three experimental groups
2. Generate ego involvement (introduction of the cover story)
3. Questionnaires
4. Penalty kicks
5. Manipulation check questionnaires

The same male experimenter conducted the experiment with all the groups under study. Upon agreeing to take part in the study, participants were asked to complete a questionnaire based on demographics, self-efficacy, perceived control, achievement goals and manipulation checks. This was done during their first visit to the laboratory. Those who refused to sign the consent forms and answered “no” to the questionnaire on belief in superstitions were excluded from the study. After answering the questionnaire, participants engaged in the football kicking task while wearing the heart-rate monitor.

Their individual performance was recorded. These results and heart-rate readings served as a baseline with which the second visit's performance and heart rate readings were compared. Participants wore the same clothing and shoes for both the trial and the main football penalty kicking task.

Participants were randomly assigned into the three experimental conditions. Participants were escorted to the laboratory, where they were welcomed by the experimenter. To generate high ego-involvement, participants were informed of the importance of the task and the need for their team to win the reward or the prize money (£50) at stake. The competition was such that team members of each team were invited to the lab to engage in the football kicking task. The football kicking took place in the presence of the experimenter. Each team member took five kicks. They were told that the study was designed to examine the relationship between the ability to adapt to a team situation in a performing task and the ability to succeed at real-life situations, and that previous research has found a high association between high scores in these domains and successful achievement of tasks in everyday life at one's job or university (Van Raalte et al., 1991). There were follow-up questions to measure the extent of ego involvement. Two questions were used in measuring ego involvement: "How important was the performance task to you?" (1 = definitely no to 5 = definitely yes), and "How tense were you before the penalty taking task?" (1 = definitely no to 5 = definitely yes).

The following rules of the competition were explained to participants. The team was eligible to win £50 if their members scored the most points. Participants were informed that they were taking part in a study on fine motor skills. In doing so, the experimenter also manipulated the experimental conditions. The experimenter told the participants for whom the 'conforming superstition' was activated to "use this ball, so far it has proven to be the lucky ball". For another third of the participants, the ordinary starting

signal was used by the experimenter, which did not activate a superstitious concept at all. For the remaining participants, the experimenter used the same phrasing as in the experimental condition, except for reminding them to engage in a personal superstition or ritual behaviour before starting. Here, instead of saying “start,” the experimenter said, “remember to put on your lucky charm or touch wood before you start”, which is similarly superstitious but has no conforming superstitious nature. Prior to performing the football kicking task, participants filled in a questionnaire concerning their perceived control, confidence and achievement goal orientation. Participants were asked to put on their heart-rate monitor throughout the period from which they started answering the questionnaires to end of the kicking task. Participants’ heart rate was recorded just after they took their penalty kicks to determine their arousal level.

The main focus of the task was based on kicking abilities and required special skills in converting spot kicks. To reduce the time gap between the kicks and the questionnaire answering, detailed instructions for both activities were given to the participants at the beginning of the experiment. Each explanation was followed by a short demonstration by the experimenter to ensure participants understood the task. Instructions for this task pointed out to the participants that they should focus on how to hit their targeted spot. Participants were instructed to perform the kicking task with their preferred or most comfortable leg. They performed each kicking task within a space of five seconds.

Subsequently, participants performed the required ten kicks from the same distance of twelve yards (approximately eleven metres) from the goal line; the experimenter recorded the result for every trial. There were five demarcations in the goal post; a successful hit at any of the cones earned a point (1), and a miss earned non (0). See the picture below:



*Figure 3: Demarcated cones as targets for penalty kicks*

Following completion of the spot kick, participants completed an ego-involvement and conformity questionnaire, which probed for suspicion about the cover story, and they were thoroughly debriefed as to the purpose of the study. These did not form part of the main data set for the analysis. Participants that showed awareness of the real purpose of the study or failed to conform, non-superstitious participants and those whose ego orientation was not activated were excluded from the study. In all, nine (9) participants were excluded from the study for the reasons listed above. All participants were reassured that there were no negative implications of their performance for “life success”. Participants were thanked, offered fruits as their compensation and the reward of £50 was given to the winning group.

In sum, Study 5 was based on a single factor design consisting of three conditions (“personal superstition” vs. “conform superstitions” vs. control).

## **Data Analysis**

The number of trials in which participants successfully scored from the spot kicks served as the dependent measure. Thus, a higher score indicates a better performance in the required motor task. Using participants' performance index from the main football kicking task as a dependent measure, 1-way factorial ANCOVA was used to analyse the results.

There was a follow-up analysis to examine whether perceived control, self-efficacy and achievement goals in the performance task predicted superstition activation and its impact on the performance of the task. For this analysis, the conformed superstition will be coded as -1 and the personal superstition activation will be coded as 1.

## Results

A one-way between-groups analysis of covariance was conducted to compare the effects of three different interventions (personal superstition, control group and conforming superstition) designed to improve participants' performance on the penalty task. There were levels of the independent variables (personal superstition, conforming superstition control and control group). The independent variable was the type of intervention (personal superstition, conforming superstition, control), and the dependent variable consisted of scores on the penalty task taken after the intervention was completed. Participant's performance on the penalty task prior to intervention administration of the superstition was used as the covariate in this analysis.

Preliminary checks were conducted to ensure that there was no violation of the assumption of normality, linearity, homogeneity of variances, homogeneity of regression slopes and reliable measurement of the covariate.

The covariate, performance 1, did not significantly correlate to the participant's performance 2,  $F(1, 48) = .024, p = .88, r = .16$ . However, there was a significant effect of superstition on levels of performance after controlling for the effect of trial performance 1,  $F(2, 48) = 4.51, p = .02, \text{partial eta squared} = .16$  (large effect size according to Cohen's (1988) guidelines).

As predicted, inspection of Figure 4 reveals that the performance in the penalty task indeed depended on which superstitious concept had been activated prior to the task. It was evident that personal superstition ( $M = 5.39, SD = 1.69$ ) enhanced performance in the penalty task more than conforming superstition ( $M = 1.72, SD = 1.41$ ) and control superstition ( $M = 3.39, SD = 1.69$ ). This shows that when athletes activate a personal superstition they perform better than when they are made to conform to a superstition.

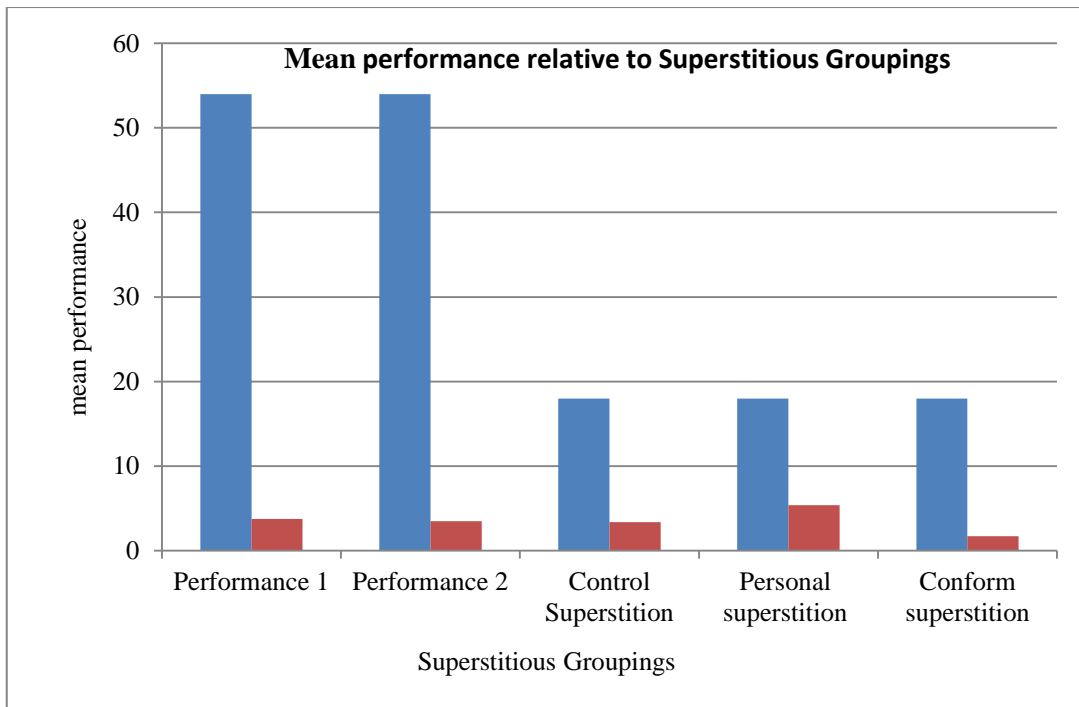


Also, participants in the control superstition group ( $M = 3.39$ ,  $SD = 1.69$ ) performed better than the conforming superstition group ( $M = 1.72$ ,  $SD = 1.41$ ). This is an indication that imposing a ritual on an athlete may inhibit performance.

Planned contrasts revealed that having a personal superstition significantly increased performance compared to conforming to a superstition,  $t(48) = -2.42$ ,  $p = .02$ ,  $r = .33$ , but not when compared to no superstition,  $t(48) = -.71$ ,  $p = .48$ ,  $r = .01$ .

*Table 11: Descriptive Statistics for Covariates, Dependent Variables and Independent Variables*

	N	Mean	Standard Deviation
Performance 1	54	3.74	1.47
Performance 2	54	3.50	2.18
Control	18	3.39	1.69
Superstition Personal	18	5.39	1.69
superstition Conforming	18	1.72	1.41
superstition			



*Figure 4: Mean Number of Successful Hits in the Penalty Tasks for “Personal Superstition” vs. “Control Superstition” vs. “Conform Superstition”*

Another one-way between-groups analysis of covariance was conducted to compare the effects of two different interventions (personal superstition and conforming superstition) designed to improve participants' scores on the tenets of the TCTSA before a penalty task.

Preliminary checks were conducted to ensure that there was no violation of the assumption of normality, linearity, homogeneity of variances, homogeneity of regression slopes and reliable measurement of the covariate.

The covariate, self-efficacy scores at the baseline trial, was not significantly related to the participant's self-efficacy score at post trial,  $F(1, 48) = .062$ ,  $p = .08$ ,  $r = .31$ . Also, there was no significant effect of superstition on scores of self-efficacy after controlling for the effect of baseline scores for self-efficacy,  $F(2, 48) = 1.58$ ,  $p = .22$ , partial eta squared = .06.

Planned contrasts revealed that having a personal superstition did not significantly increase self-efficacy, compared to no superstition,  $t(48) = 1.69$ ,  $p = .098$ ,  $r = .24$ , and also when compared to conforming superstition,  $t(48) = 1.07$ ,  $p = .29$ ,  $r = .15$ . See table 12 for the descriptive statistics.

Table 12: *Descriptive Statistics for Covariates, Dependent Variables and Independent Variables*

	N	Mean	Standard Deviation
Pre-self-efficacy	54	26.48	2.44
Self-efficacy	54	27.19	3.08
Control	18	27.00	2.66
Superstition Personal	18	26.67	3.38
superstition Conforming	18	27.89	3.2
superstition			

The covariate, perceived control scores at the baseline trial, was not significantly related to the participant's perceived control score at post trial,  $F(1, 48) = .034$ ,  $p = .86$ ,  $r = .03$ . Also, there was no significant effect of superstition on scores of perceived control after controlling for the effect of baseline scores for perceived control,  $F(2, 48) = 1.85$ ,  $p = .17$ , partial eta squared = .07. See Table 13 for the descriptive statistics.

Planned contrasts revealed that having a personal superstition did not significantly increase perceived control compared to no superstition,  $t(48) = -1.92$ ,  $p = .061$ ,  $r = .12$ , and also when compared to conforming superstition,  $t(48) = -.85$ ,  $p = .40$ ,  $r = .15$ .

*Table 13: Descriptive Statistics for Covariates, Dependent Variables and Independent Variables*

	N	Mean	Standard Deviation
Baseline			
Pre-Personal control	54	12.8	1.86
Personal control	54	12.72	2.02
Control	18	12.06	2.1
Superstition			
Personal superstition	18	12.78	1.93
Conforming superstition	18	13.33	1.94

One-way between-groups analysis of covariance was conducted to compare the effects of two different interventions (personal superstition and conforming superstition) designed to improve participants' scores on the sub-scale of the Achievement Goal Questionnaire for Sport (AGQ-S) before a penalty task.

The covariate, Map, MAV, PAp and PAV scores at the baseline trial were not significantly related to the participants' Map, MAV, PAp and PAV scores at post trial. Also, there was no significant effect of superstition on the Map, MAV, PAp and PAV scores after controlling for the effect of baseline scores for Map, MAV, PAp and PAV.

A final one-way between-groups analysis of covariance was conducted to compare the effects of two different interventions (personal superstition and conforming superstition) designed to improve participants' scores on the tenets of the TCTSA before a penalty task.

Preliminary checks were conducted to ensure that there was no violation of the assumption of normality, linearity, homogeneity of variances, homogeneity of regression slopes and reliable measurement of the covariate.

The covariate, heart-rate measurement at the baseline trial, was not significantly related to the participants' heart-rate measurement at post trial,  $F(1, 48) = .05, p = .82, r = .03$ . Also, there was no significant effect of superstition on heart-rate scores after controlling for the effect of baseline heart-rate scores,  $F(2, 48) = 1.07, p = .35, \text{partial eta squared} = .04$ .

Planned contrasts revealed that having a personal superstition did not significantly increase heart rate compared to no superstition,  $t(48) = -1.27, p = .21, r = .18$  or when



compared to conforming superstition,  $t(48) = -.002$ ,  $p = .99$ ,  $r = .00$ . See Table 14 for the descriptive statistics.

*Table 14: Descriptive Statistics for Covariates, Dependent Variables and Independent Variables*

	N	Mean	Standard Deviation
Control Superstition	18	113.89	13.19
Personal superstition	18	119.06	11.74
Conforming superstition	18	119.06	11.12

## Discussion

The present study sought to provide empirical evidence for a causal link between superstitions and performance. Specifically, it investigated if activating a personal superstition improves subsequent performance compared with conforming to a given superstition or control condition. Second, it attempted to shed light on the psychological mechanisms that underlie TCTSA, such as perceived control, achievement goals and self-efficacy, and their contribution to the beneficial or unfavourable influence of superstition on performance.

The above results support the prediction that participants who activate their personal superstition or their lucky charm would improve their performance more than the conforming group. The present study confirms Matute's (1994) and Dudley's (1999) revelations that superstitions prevented performance impairment. Specifically, the current research found that participants who activated their personal superstitions during a penalty task performed better than the conform group. The present findings support Ciborowski's (1997) finding that athletes reported engaging in superstitious thoughts and practices in order to improve their performance. However, participants in a control condition performed better than those in the conforming condition. It can be suggested that forcing a ritual on an athlete can lead to performance impairment. Similar to the previous study, team sport athletes who were made to conform experienced negative psychological consequences that share tenets of a threat state, which can impair performance.

The current study revealed that having a personal superstition did not significantly increase athletes' self-efficacy. In this regard, this finding contradicts Day and Maltby's (2005) empirical studies that examined that the potential effect of superstition on

enhanced feelings of confidence stems from their participants belief in good luck. This apparent contradiction may be due to methodological differences. Day and Maltby's (2005) used observed correlations, which do not allow for the interpretation of the results in a causal manner; the present study employs an experimental design that has strength in establishing a causal relationship. This finding contradicts Darke and Freedman's (1997b) experimental study that concluded that belief in good luck can serve as a source of confidence for future events, thus exerting a beneficial function. The difference can be attributed to the participants involved in these studies. It could be that elite athletes have different sources of self-efficacy, and superstitious rituals are not one of them. The present study repudiates Ofori et al.'s (in press) findings that elite athletes' prayers and superstitious rituals serve a functional purpose of boosting confidence. The research on superstitions as a source of athletes' confidence is inclusive and as such there is a need for a more rigorous approach to the phenomenon to establish its beneficial impact on athletes' confidence.

Although perceived control scores at the baseline trial did not significantly relate to the participants' perceived control scores at post trial, the results suggest that participants' perceived control scores were not affected by the superstitious condition after controlling for effect of baseline scores for perceived control. Indeed, compared with the control condition, perceived control scores in the personal superstition condition did increase slightly, whereas perceived control in the conforming superstition condition increased. When superstition was introduced by a person in authority, such as the experimenter, it might have been perceived as a more credible source of gaining control. This perspective is well in line with earlier presented research demonstrating that people become more superstitious when they are exposed to ostensibly uncontrollable coercions (Keinan, 1994, 2002; Malinowski, 1954). This manifestation points in the

same direction as the study by Rudski (2004), who demonstrated that people demonstrating an illusion of control indicated greater levels of overall paranormal beliefs. This suggestion was mainly based on manipulation of a superstition and the perceived control. However, from this finding it is impossible to conclude that an increased sense of control actually follows from acting on a superstition, be it personal or conforming, since the increases were not statistically significant.

The analyses showed that the Achievement Goal Questionnaire at baseline was not related to endorsement of M<sub>Ap</sub>, M<sub>Av</sub>, P<sub>Ap</sub> and P<sub>Av</sub> scores at post trial. Also, there was no significant effect of superstition on M<sub>Ap</sub>, M<sub>Av</sub>, P<sub>Ap</sub> and P<sub>Av</sub> scores after controlling for the effect of baseline scores for M<sub>Ap</sub>, M<sub>Av</sub>, P<sub>Ap</sub> and P<sub>Av</sub>. These findings failed to corroborate the hypothesis that psychological mechanisms that underlie the TCSA, such as perceived control, achievement goals and self-efficacy, contribute to the beneficial or unfavourable influence of superstition on performance. A methodological limitation may explain these findings. In the present study, it remains unclear whether the manipulation of the superstition or the concomitant manipulation of the experimenter's performance is responsible for the obtained results. Although valid and recent measures of self-efficacy (Coffee & Rees, 2008), perceived control (Bonetti & Johnston, 2008) and achievement goals (AGQ-S; Conroy et al., 2003) were used, these measures might not have been specific enough to the situation. However, research on achievement goal theory (e.g., Smith, 2004, 2006) shows that participants endorsed a performance-avoidance (relative to performance-approach) goal more in the threat conditions, which the present findings failed to support.

In addition, personal superstition did not have any significant relationship with physiological aspects (heart rate) of challenge and threat states, and did not impact on performance. The present findings contradict existing models of challenge and threat

states. Evidence from the cardiovascular responses is proposed to be indicative of differential activation of the sympathetic-adreno-medullary (SAM) and pituitary-adreno-cortical (PAC). Jones et al. (2009) proposed that a challenge response result from SAM activation would produce greater cardiac activity (increased heart rate). In the challenge response, the SAM activation represents an attempt to mobilise energy for action (fight or flight) and coping, whereas the threat response results from PAC (and SAM) activation and is a 'distress system' associated with perceptions of actual or physical harm (Blascovich & Tomaka, 1996). However, the current studies showed that increase in heart rate did not necessarily lead to better coping with a high performance setting and as such had no impact on performance. This contradiction may be attributed to participants' perception of the performance environment and that fact that the reward they stood to gain or the consequence of failure was not extreme.

It has been claimed that experimentally induced superstitions are qualitatively different from more traditional superstitions (Rudski, 2001). Basically, what is called a superstition in the present study is the incorrect belief that an ordinary size five ball (lucky ball) is responsible for scoring a penalty kick. However, participants were made to believe they had no control over this penalty task, they were randomly assigned to the various experimental groups, and they had no control over the outcome of the task and the performance of their teammates and other teams. It is not surprising that their subsequent psychological state and performance in the penalty kicks was impaired in comparison to those participants who were not made to conform to the lucky ball superstition.

Traditional superstitions, in the worldview of the participants, usually involve magical incantations focused on a specific task and are performed prior to that task. The mode of activation, the detailed ritual procedure and the consultation of spiritualists were all

absent from the experimental setting. A fisherman exhibits superstitions in order to be fortunate in fishing. A student's superstition is aimed at the exam. It is thus questionable whether the experimentally induced superstition in the present study can actually be compared to traditional superstitious behaviour. The belief that superstitions lose their potency when disclosed and the absence of detailed incantations explain why it is difficult to reproduce superstitions in the laboratory. However, all participants in the study confirmed their belief in luck by answering affirmatively to such a question by ticking three and above on a five-point scale.

Most importantly, all participants in the personal superstition group indicated that they had engaged in superstitious behaviour during some important situation in the past. Participants' answers to the debriefing questions include the importance of the performance task, how tense they were before the penalty taking task and how determined they were to win the performance task. The logic behind this was to determine how serious participants were during the task and the importance they placed on it. Ultimately, the difference between activating personal superstition versus conforming superstition or a control group is applicable to performance but not the tenets of the TCTSA. Thus, the findings of Study 5 indeed partially complement the results of the previous studies in a meaningful way. Future research should investigate other mechanisms (reinforcement, contiguity) that might explain superstition and its functional significances to the athletes. The present findings, their relation to previous research, and their implications and future perspectives will be discussed in more detail in the following general discussion chapter.

## CHAPTER 9: GENERAL DISCUSSION

### Significance of the Thesis

Past research has shown that athletes tend to engage in a variety of superstitious behaviours, which they believe to be efficacious in controlling luck or other external factors. These are a constant feature in an athlete's career when they face the quest to achieve the best performance possible and to control seemingly uncontrollable and uncertain situations. Previous research has demonstrated that precisely these situations often elicit the apparently irrational thoughts and behaviours associated with superstitions (Keinan, 2002; Vyse, 1999). Some writers have sought to portray that superstitions beliefs and behaviours are associated with primitive societies and as such have no place in this our technological world.

The present thesis suggest that the fulfilment of these superstitions in the face of an upcoming performance task and career uncertainties serves a specific beneficial function to the individual but can be dysfunctional to the team process depending on the their source. The current study also suggests that superstitions are not limited to primitive societies but are a feature of all human groups. Although from an evolutionary view any behaviour that maintains over a long period of time should be adaptive (Buss, 2000), the imposition of such beliefs on others can also be detrimental to the individual. Thus, the notion of a superstitious benefit is well in line with my suggestion that superstition, like fire, can be a good servant but a bad master depending on the mode of acquisition and execution. The basic questions for this thesis have been: are superstitious behaviours common across cultures? Is there a relationship between learned helplessness and superstitious behaviour, and between positive and negative beliefs? Do positive and negative superstitious beliefs serve similar psychological



functions? What circumstances are especially likely to elicit superstitious thinking and acting? Do superstitious behaviours and beliefs indeed yield an advantage for those who hold them? Where and how did sports superstitions originate and under what conditions do they persist? Which people are especially prone to superstitions? What circumstances are especially likely to elicit superstitious thoughts and actions? Can superstitious behaviour be activated as a means of avoiding a state of threat or regaining control when experiencing psychological tension? This thesis adopted a variety of methodologies to explore and examine the phenomena in the present line of research.

Significant differences existed between British students and Ghanaian students in overall usage of superstitious behaviour and positive and negative superstitious beliefs. The study predicted that differences existed between Ghanaian students and British students in superstition (negative and positive) and behaviour. Given that superstitions are usually held by athletes and students (Albas & Albas, 1989; Becker, 1975), who face performance-related situations most frequently, a direct beneficial influence of superstition on performance rather than other aspects of the situation seems to be likely. Furthermore, students and athletes are members of a group, and are formally or informally socialised as members. They acquire the cultures as well as peculiar habits of the subgroup or team. The results of the present research are consistent with this notion that qualitative differences in superstition beliefs are related to culture. While Study 1 confirms earlier findings concerning the high prevalence of superstitions within the population of students and identifies several specific common superstitions across cultures, Studies 2 through 5 repeatedly demonstrate the functional benefits of superstitions in sports. Although superstition may be seen as unethical by some observers, sport scientists cannot prevent athletes from engaging in it. Doing so may

create distrust and may be seen as disrespecting client's beliefs and values, infringing on their rights and potentially impairing performance.

The findings of Study 2 suggest that negative and positive superstitions serve different psychological functions. Positive superstitions could have their basis in quite different mechanisms, such as the promotion of self-efficacy and optimism, as posited by Wiseman and Watt (2004).

Specifically, the present research contends that superstition rituals are likely to emerge when athletes' primary control mechanism fails them. The majority of the participants, when faced with a stressful situation, engaged in a ritual. These results suggest that religious or superstitious rituals can reduce anxiety when stressors are unpredictable and uncontrollable (threat state), and are commonly called on as a coping mechanism. Although the result in other studies may differ from this suggestion, it was evident in Studies 3 and 4, where athletes shared their personal superstitious experiences. These results support general assertions that superstition appears to arise from situations of uncertainty (Burger & Lynn, 2005; Felson & Gmelch, 1997; Vyse, 1997). Accordingly, the study suggests that the mode of acquiring a ritual can influence the cognitive, personal and situational characteristics that dictate challenge and threat appraisals of the athletes. Specifically, in Study 2 through Study 4, the results suggest that superstition can be both functional and dysfunctional in team processes. The findings of Study 5 suggest that better performance was evident when participants activated their personal superstition.

On the whole, the results provide evidence in support of the assertion that superstition cuts across all societies and spans generations. The activation of a superstition can serve

both beneficial and dysfunctional functions depending on the type of superstition and its source.

## Detailed Explanation

### Cross-cultural Differences in Superstitious Beliefs

Superstitious beliefs are not transmitted by scientific certification. These beliefs are prevalent in a culture; there seems to be no need for their certification. It would be extremely difficult to identify a society, be it developed or developing, which is completely free of superstitions. Prior research has suggested that supernatural beliefs are widely held by educated Ghanaians (Jahoda, 1970). There is some existing data that suggest a wide spread of this phenomenon over various times and cultures (Jahoda, 1969; Vyse, 1997). The present line of research extends these findings by suggesting superstition is prevalent even among the educated population across cultures.

Thus, the findings demonstrate that the cultural differences in superstitious beliefs can be explained by deprivation theory, which suggests that poorer people are more inclined to superstition, as the majority of Ghanaians live in more deprived economic conditions than people in the United Kingdom. Furthermore, the rate of graduate unemployment, coupled with uncertainties in the job market for Ghanaian graduates, may predispose them to have a stronger belief in superstition than their counterparts in the UK. Thus, superstition might be a sort of “spiritual help” in more difficult life situations. In as much as traditional parapsychological beliefs such as superstitions, taboos, ancestral worship and the presence of spirits are presumed to have greater influence in Ghana than the United Kingdom, it is possible that such magical thinking contributed to the higher levels of superstitious behaviour endorsement among Ghanaian students. This explanation is in support of Maduewesi’s (1982) findings that fears of the supernatural were more prevalent among West Africans than Western adolescents. It can also be suggested that this difference may be due to the fact that Ghanaian students are

subjected to strong pressures toward compliance with strict social rules which foster the development of over-controlled behaviour (superstitious behaviour) and discourage development of under-controlled behaviour, as found in Western cultures (Ingman, Ollendick, & Akande, 1999). It can also be suggested that Africans are more likely than Europeans to exhibit superstitious behaviour because they have historically been in the midst of great social change and deprivation, which, in their demand appraisals, may be perceived as dangerous and uncertain (Padgett & Jorgenson, 1982). In such states, individuals with low perceived control are likely to activate superstitious behaviour.

The present findings support Vandewiele's (1981) suggestion that the supernatural is part of everyday culture in West Africa, while it is less evident in Western societies. It can be suggested that the root of the socio-cultural influence on superstitious beliefs resides in the crises of the human condition; such experiences may also be learned through social interaction. For example, a cognitive schema that allows for the existence of superstition might be shaped by exposure to crises; however, it might also be influenced by the cultural transmission of religious beliefs. The notion that Ghanaians are more likely than British people to engage in superstitious behaviour could be that the 'reality' of these rituals are products of the cultural transmission of West African religious rituals. In other words, Ghanaians may be more likely than the British to accept paranormal interpretations because of religious beliefs they learn in Ghanaian subculture, not only because of their disadvantaged position in society.

## **Determinants of Superstition**

Although the TCTSA is an amalgamation and extension of the biospsychosocial (BPS) model of challenge and threat (Blascovich & Mendes, 2000), it can be suggested that the root of the socio-cultural influence on superstitious beliefs resides in the crises of the human condition; experiences of superstition may also be learned through social interaction. It can be suggested that culture can function as a surrogate for various forms of superstitions.

The TCTSA can generate several hypotheses regarding the likelihood of engaging in superstitious behaviour. It can be argued that the British student athletes are unlikely to activate superstitious behaviour because they have the ability to cope with the demands of a negative situation, which may include skills, knowledge, abilities, dispositional factors (e.g., self-esteem, sense of control) and external support available to them (Blascovich, Mendes, Tomaka, Salomon, & Seery, 2003), to clearly understand their world. In contrast, Ghanaian student athletes rely on their superstitious rituals, which may serve as a mechanism for coping with stress (Irwin, 1992). This finding supports Perkins' (2000) assertion that superstitious behaviours "appear to be employed by such individuals in an attempt to cognitively defend against the threat of an incomprehensible and unpredictable world" (Perkins, 2000; p.ii-iii). Indeed, similar mechanisms are also thought to underlie various forms of religious coping (Holland, Passik, Kash, Russak, & Gronert, 1999).

The present data set found the same significant patterns as revealed by Wiseman and Watt (2004), that women tended to endorse both types of superstition to a greater extent than men. It can also be suggested that the sometimes disadvantaged status of women may

partially explain why they are more likely than men to report superstitious beliefs. As the TCTSA posits, failure on the part of these women in such conditions to deal with their situation moves them into a state of threat. Finally, it can be suggested that persons with lower incomes may rely on superstitious beliefs as ways of coping with the threat associated with their economic conditions. This finding recommends the need for any valid measure of superstitious belief to include reference to both positive and negative superstitions.

### **Superstition and Religion**

Unfortunately, researchers have not been able to assess specific religious rituals and the degree to which they will elicit superstitious beliefs, and some have found that religious preference (Fox, 1992) and religious orientation (MacDonald, 1992) are not related to reported paranormal experiences. However, Yamane and Polzer (1994) have found that people who are most involved in their religious traditions are also the most likely to report that they have been “very close to a powerful, spiritual force” that seemed to lift them out of themselves. It can be argued that religious traditions, as well as cultural systems, could be influential factors in explaining the current findings. Other findings supported a positive significant relationship between negative and positive superstitious beliefs. These findings justified our use of different measurement scales for superstitious behaviour and beliefs.

From Study 2, religion, like positive superstitious beliefs, might serve as a source of emotional support, as a vehicle for positive reinterpretation and as a strategy for active coping with a stressor. This explains why researchers on superstition in sports suggest that, whereas athletes frequently use superstitious strategies (e.g., praying, clothing rituals and

lucky charms); in situations of uncertainty and low control they generally fall to prayers (religious ritual) and lucky charms (positive superstitious beliefs). It can be argued that positive superstitions have an influential effect on the demand and appraisal resources available to the individual. This may cause the individual to see the stressful situation as a challenge state in the TCTSA, where a high-intensity positive emotion is experienced. Athletes with such emotions are unlikely to experience psychological tension and stressors. Furthermore, those who adopt acceptance as a coping mechanism are more likely to engage in positive superstition beliefs. Thus, those who by virtue of their positive superstitious beliefs are able to perceive a stressful situation as a challenge state and they are capable to bring it under their control. This is consistent with Jones et al.'s (2009) assertion that high levels of perceived control are related to a challenge state. This perceived high level of control may be gained from the confidence resulting from the athlete's positive superstitious beliefs.

The construct of control, be it personal, primary or secondary, is central to the model developed in Figure 1 (Study 3). In many cases, the developmental foundation of superstition is encouragement from social agents like family, culture and religion, and demographic indicators such as age, gender and socio-economic status of the athletes involved. Superstitious thinking may also be instigated by psychological factors like reinforcement, particularly fear of the unknown, and uncertainty, which fosters a strong need for a sense of control. This heightened need for control tends to make more salient the occurrence of atypical and uncontrollable events in the athlete's life. The search for control can lead to the endorsement of superstitious beliefs because these beliefs offer a sense of control when the individual feels his personal skills and abilities are unable to cope with



the demands of the situation. Individuals who are able to achieve a sense of control without appealing to superstitious beliefs and behaviour can be described as relying on their primary control strategies. These athletes are likely to appraise a stressful situation as a challenge state. A challenge or threat state may be mediated by the athletes' cultural and social environment; that is, the actual form of superstitious belief embraced by the athlete (e.g., the choice between psychological skill and the use of superstitious behaviour) will substantially depend on models provided by parents, teammates, club officials and the media.

### **Distinction between Different Types of Superstition**

Admittedly, the field of superstitions includes a wide range of varied thoughts and behaviours. Thus, some superstitions are socially transmitted, whereas others develop as idiosyncratic beliefs (Rudski, 2003). It was in light of this that the present study adopted measures that distinguish the various categories of superstition in regard to their origins and their functional purpose. The present research focused on this distinction, and used those superstitions for which many individuals in the present population indicated knowledge or belief. The current results offer some suggestions concerning the cultural relativity of types of superstition. Specifically, the reported findings indicate that there is an essential difference between types of superstition in terms of socio-cultural understanding of what constitutes positive and negative superstitions.

A mutually supportive interaction is set up between positive superstitious beliefs and negative superstitious beliefs; thus, belief encourages the interpretation of anomalous experiences as positive or negative, and personal encounters with seemingly magical meanings further buttress superstitious beliefs. The model additionally posits two other feedback loops. When a superstitious behaviour provides the individual with a sense of coping with an otherwise uncontrollable event, the attenuation of feelings of helplessness may reinforce the superstitious rituals as functional. On the other hand, when superstitious behaviours create seemingly unpleasant consequences, they are termed dysfunctional. The major classes of identified correlates of superstitious behaviour may bear upon various elements of the model, depending upon the source of the belief. As was evident in Studies 3, 4 and 5, conforming superstitious behaviours are likely to create negative psychological consequences, which have the potential to instigate a threat state. Superstitious types and sources may be deduced from a social context. That is the likelihood of previous negative experience within certain social setting and the occurrence of uncontrollable events in the athlete's career can influence the athlete's demand appraisal of the situation.

Congruent with the findings of previous studies in a performance-related context (Albas & Albas, 1989; Wiseman & Watt, 2004) the present findings indicate that there is a clear distinction between superstitions that are performed to bring good luck and those superstitions that serve the purpose of warding off bad luck. It is a bit simplistic to think of superstitions according to the purposes they serve and the traditional generalization of superstition as either adaptive or maladaptive to its believers. The present study also clarifies the conceptual difference between types of superstitious beliefs and behaviours, as

it was evident that they may all have their roots in the individual's culture, but serve different psychological functions.

## **Development and Maintenance of Superstition**

Rather than dying out, superstitions have been thriving in today's technological world (Campbell, 1996; Vyse, 1997). As described earlier, the prevalence of superstitions may have even increased throughout the last decades (Wiseman, 2003). What is it that makes superstitions so tenacious among athletes especially? Similar to the claims of other theorists, in the present research it is argued that the high prevalence, development and maintenance of superstitions could be explained by socialisation processes and the beneficial function of these thoughts and behaviours. Specifically, the present thesis proposes that cultural influences, conformity, half-beliefs and superstitions are means of dealing with anxiety. As outlined before, the present results indeed indicate that a personal superstition is usually activated to migrate from a threat state to a challenge state, which provides an ideal condition to enhance performance in an achievement context. However, there is also a possibility that a negative superstition or conforming superstition can also reverse a challenge state to threat state. The question remains whether the functional benefits of superstition and socialisation performance are responsible for the preservation of superstitions. In this study, participants openly discussed how they developed their superstitions and what their potential consequences were.

Specifically, from Study 1 through to Study 4, where superstition development and maintenance was explored, the results indicated that participants did indicate the influence of their families and other social agents. From Study 2 through to Study 5, it was evident that superstition has psychological benefits to its users. If people are oriented towards superstitious behaviours and receive some positive benefits, such behaviours are normally maintained. One reason suggested by the present data could be that behaviour that produces positive results is reinforced, and that which produces negative results is stopped. As the present findings reveal, athletes use superstition to regain control, to cope with uncertainty, to gain confidence and eventually to establish a challenge state. Therefore, the increase in confidence, feelings of control and renewed strength to cope with anxiety might be experienced as an important outcome of superstitions in and of itself, and might thus even be the foundation for the high prevalence of superstitions among athletes. In fact, this perspective is well in line with theoretical reasoning by Vyse (1997), who also suggested that the eventual articulation of superstitious rituals grows out of social influence combined with emotional and cognitive benefits derived from it.

Collectively, the present findings support the notion of a beneficial functioning of superstitions in terms of coping with anxiety, increasing self-efficacy, gaining control and performance enhancement, but suggest that the most important factor for the existence and maintenance of superstitions might be the influence of social agents.

## **Psychological Benefits of Superstition**

As described earlier, superstitions are particularly likely to arise in situations of high psychological stress, perceived uncertainty and low controllability. Moreover, the prevalence and maintenance of superstitions seems to be especially high among elite athletes, who face performance situations which feature an enormous demand to succeed and greater levels of risk and uncertainty. With this in mind, it seems natural to conclude that superstitions actually help athletes who hold these beliefs to deal with pressure and to overcome mental and physical obstacles associated with a threat state. Even though empirical research on beneficial functions of superstitions is scarce, several authors have suggested such a positive influence of superstitious beliefs on psychological well-being. Thus, it has been speculated that athletes use superstitions to reduce anxiety, build confidence and cope with uncertainty (Dunleavy & Miracle, 1979; Neil, 1980; Neil et al., 1981; Womack, 1979). Schippers and Van Lange (2006) claimed that the benefits of superstitions might stem from reducing psychological tension in athletes, thus enhancing the probability of reaching an ideal performance state (IPS, Garfield & Bennet, 1984; Williams, 1986). These psychological benefits help the athletes to create a challenge state where anxiety can be viewed as facilitative rather than debilitating.

All of these speculations are consistent with the notion that the enactment of superstitions bears some kind of psychological benefit for the individual holding the superstition by providing nearly sufficient resources to meet the perceived demands of a situation. In fact, some of these suggestions, such as an increased level of perceived confidence in a specific performance setting, ability to cope with the demands of a situation and dispositional factors (e.g., self-esteem, sense of control) seem to come rather close to the proposed

influence of superstitions on athletes' resource appraisals. Alongside these unevaluated arguments, there are some empirical findings which provide further support for this perspective, as demonstrated in Figure 1 above.

### ***Coping mechanism***

Examining this topic within these Studies; 2, 3 and 4, there was a significant relationship between religion and superstitious beliefs and behaviour. The data collected suggested that the more religious a person is, the more likely they are to engage in superstitious behaviour. This is not surprising, because in the process of responding to their stress, they practise their religious rituals, which onlookers may term superstitious behaviour. This is consistent with Coakley's (2001) suggestion that athletes utilise religious prayers as a coping mechanism for uncertain, stressful situations. The use of superstitious behaviour is similar to religious rituals as a coping mechanism in stressful situations (Glock & Stark, 1965; Stark & Bainbridge, 1980). The less religious the person is, the more likely they are to exercise superstitious beliefs. In relationship with the TCTSA, religious and superstitious individuals can influence their demand and resources appraisal, which is a key component of the TCTSA model. However, the findings from Study 5 failed to support these assumptions, as the tenets of the TCTSA (self-efficacy, goal orientation and perceived control) did not reach significant levels. This might be due to the sample size in Study 5, which accounted for the non-significant findings. The reliability of the perceived control measure was questionable, and this may have influenced the results.

### *Regaining control*

This finding is of some significance as regards the assertion that people attempt to regain control through the use of superstitious strategies (Keinan, 2002). The results suggest that superstitious behaviour is moderated by personal control and coping variables. Indeed, the regression results go so far as to suggest that exaggerated internal control, behaviour disengagement, venting and self-blame were important contributors to superstitious behaviour. An explanation for this pattern is that participants who adopt venting, self-blame and behaviour disengagement are likely to engage in superstitious behaviour as a coping mechanism when they encounter a threat situation. This is because athletes that activate superstitious behaviour in stressful encounters tend to shy away from confronting their problems directly, preferring instead to deny or be distracted from—rather than manage their problems emotionally (Callaghan & Irwin, 2003). Thus, it seems that their belief in superstition may influence their demand appraisal and reflect a more active mechanism for coping with a threat state.

The present study confirms Womack's assertion (1979) that superstitious behaviours and rituals are thought to reduce anxiety and create a sense of control in a high-stress, uncertain situation (Matute, 1994). Overall, the results provided partial support for the hypothesis that personal control and coping mechanisms predict superstitious behaviour, since secondary control measures did not predict superstitious behaviour. The strength of this support, however, depends on the individual's appraisal of the threat situation and its relationship with the person's coping strategies and personal control dimensions available to them.

Jones et al., (2009) posit that self-efficacy, perception of control and achievement goals determine challenge states in response to competition. Our participants might score highly on the above determinants and as such may not see those negative conditions as a threat. It is also possible that the participants in this study had different approaches to re-establishing or regaining perception of control in a state of helplessness, not including superstition. This means of gaining control could be religious rituals, which may seem superstitious to observers. This calls for a clearer distinction between superstitious rituals and religious rituals.

This interaction found in Study 2 suggests that secondary control may function as a buffer against negative superstitions. As such, people might have attempted to regain control through the use of superstitious strategies (lowering aspirations) or magical thinking (Jehoda, 1969; Keinan, 2002; Malinowski, 1954). The current results provided support for this model. Thus, secondary control strategies made significant contributions to the prediction of negative superstitious beliefs. This is possible because in stressful situations the link between secondary control and negative superstitious beliefs can be implicated as an individual-difference variable but not an automatic predictor. Again, it might also be because negative superstitious beliefs serve a psychological function which is maladaptive, that leads people to lower their aspirations. Once such demand appraisal has been executed effectively by lowering expectations, an individual can approach the event as a challenge rather than a threat. In contrast, if the person failed to lower their expectations, this can lead them to experience a state of threat. It can be argued that negative superstitions are most likely to elicit a threat state in the TCTSA. This pattern of findings confirms Heckhausen



and Schulz (1995), who suggested that secondary control may function as a buffer against negative affect.

On the basis of Neil's (1980) findings that superstitious behaviours have been used to reduce anxiety, build confidence and cope with uncertainty, it was hypothesised that positive superstitious belief might serve as a buffer to migrate an athlete from a threat state to challenge state when they encounter a stressor. The evidence from the present findings supports Matute's (1994) assertion that superstitions are utilised to give the illusion of control over reinforcement in an uncontrollable situation. This study can explain that superstition helps the individual to feel in control, which assists in their development of self-efficacy. For self-efficacy to develop, individuals require the belief that they are in control (Bandura, 1997), since control is also part of the resource appraisals delineated in the TCTSA. The present study can suggest that positive superstitions can enhance athletes' self-efficacy, help them gain control, increase their coping options and inform their appraisal of a stressful situation. This could help athletes adopt a positive perception of a potentially stressful situation and interpret their anxiety symptoms in a more helpful way. Sports and academic environments may be perceived as uncontrollable and may lead to elevated anxiety for athletes, coaches, students and spectators. Superstitious behaviours and rituals are thought to reduce anxiety (Womack, 1979) and create a sense of control in a high-stress, uncertain situation and a state of learned helplessness. Superstitious beliefs and behaviour, like various religious practices, seem to be the product of a society.

Although the enactment of superstitious rituals often does not make sense to observers, it may serve an important psychological function for athletes prior to a game. The regulation of psychological functions such as coping becomes especially important in situations

characterised by uncertainty and high importance. While the enactment of superstitious rituals is often believed to be unrelated to any outcome, the present findings suggest that at least one important outcome is likely to be obtained: coping with stress and anxiety. This outcome may be very important to subsequent performance, perhaps even more so when the stakes are high. An assumption underlying the present research is that the enactment of superstitious rituals serves the function of coping with negative stressors. It should be clear that prior to a game, elite athletes will experience some level of anxiousness and nervousness. These experiences may generally vary from opponent and from game to game, depending on the individual appraisal of the situation.

Given that top-level sport is more than just winning versus losing, the standing of the team on the league table also determines the massive financial rewards available to the team at the end of the season. For some societies there is no excuse for failure, and success is a must. However, if the other team is equally good or better than one's own team, and injuries are another risk, then uncertainty should be high. Hence, the present study assume that the relative standing of the opponent and the risk of injuries causes uncertainty, such that uncertainty is high when the opponent is of equal or superior standing and when the athlete is returning from an injury, but relatively low when the opponent is of inferior standing and the athlete has not experienced injury or observed other athletes' severe injuries. In such situations athletes enact religious or superstitious rituals to avert the risk of injuries, to improve their chances of winning and to regain control over the risk and uncertainty in the game. If the athlete is able to exhibit control in such situations, a challenge state is said to have occurred. On the other hand, if the athlete fixates on situations of uncertainty as indicated above, due to low perceived control, a threat state is

said to have emerged. The issue of control is key to the debilitating and facilitative competitive state anxiety model (Jones, 1995), it is mentioned as a dispositional factor in the BPS model, and it is an essential part of self-efficacy. It is not surprising that athletes engage in superstitious rituals to have sufficient control to deal with uncertainty and eventually to perform as well as possible.

### ***Attributions***

Casual attributions affect self-efficacy, which affects performance (Weiner, 1986). Thus, it has been shown that individuals with a strong sense of efficacy believe performance outcomes to be personally controllable (Bandura, 1997), so they tend to attribute failure to insufficient effort or deficient knowledge, which are factors that they can change (Bandura, 1994; Zimmerman & Cleary, 2006). Conversely, individuals with a low sense of self-efficacy attribute failure to factors they cannot change, thereby increasing feelings of despair and helplessness (Silver, Mitchell, & Gist, 1995). These types of attributions are particularly important as they encourage people to engage in superstitious and religious rituals that may be adaptive changes in coping strategies and thus may affect performance. A similar process was evident in the present studies. This notion can be applied to career difficulties such as de-selection, injuries and uncertain contract renewals, which have potential to create a threat state. For example, it seems likely that the elite athletes who attributed their failures to supernatural factors can only make adaptive changes in their careers through superstitious means. Thus, for athletes who are unable to recognise or understand their own or others' actions, superstitious such as prayers, lucky charms and ritual baths may serve as a way of making sense of and/or coming to terms with any uncontrollable life events for which a direct behavioural response is seen as futile. With

this in mind, findings from the present study may also help to explain athletes' resources appraisal, which can determine their challenge and threat states. Hence, athletes with deeply rooted religious beliefs will need a religious solution or intervention to attain a challenge state.

### ***Superstition Breeds Confidence***

The present findings give credence to the assertion that superstition enhances athletes' self-efficacy beliefs. Thus, superstitious believers were just as poor (good) at regulating their self-confidence as appraising their situation with a positive and self-serving belief in their abilities and skills to overcome stressful situations. The findings clearly indicate how elite athletes enact superstitious behaviour to enhance feelings of confidence prior to important and high-profile games. Thus, the present findings represent the first study in which elite performers shared their experiences of using superstitious and religious rituals to enhance their self-confidence, despite the many speculations and assumptions concerning a relationship between these two constructs. Tobacyk and Schrader (1991) suggested a negative correlation between superstition and self-efficacy. Nonetheless, this research appeared to have limited flaws, creating some doubts about the results. Foremost, they measured superstition with a subscale of the Paranormal Belief Scale (Tobacyk, 2004; Tobacyk & Milford, 1983), which entails solely negative superstitions. On the other hand, other researchers on the subject of superstition have revealed that the majority of people engage in positive, good-luck-related superstitions more often than negative superstitions (Albas & Albas, 1989; Wiseman, 2003; Wiseman & Watt, 2004).

Second, to measure participants' self-efficacy, the authors used a very general self-efficacy scale, while Bandura (2006) advocated that self-efficacy beliefs are best measured by scales that are specific to particular domains of functioning rather than ones that assess universal efficacy expectations, which are bereft of context-specific measures. It is anticipated that such a global, unspecific measure of self-efficacy as used by Tobacyk and Schrader might reflect a general feeling of uncertainty, uncontrollability and low confidence rather than a task-specific measure of perceived efficacy. From this standpoint, the reported negative correlation between superstitions and their measure of self-efficacy can easily be viewed as in line with other findings demonstrating an increased appearance of superstitious thoughts and behaviours in situations characterised by perceived feelings of uncontrollability and uncertainty (Keinan, 1994, 2002; Malinowski, 1954; Rudski, 2004; Vyse, 1997). Regarding the current findings that represent elite athletes' accounts of how their rituals have enhanced their confidence, they may not necessarily contradict the findings of Tobacyk and Schrader (1991). In fact, knowing that superstitions most often occur under those specific situational conditions, many researchers have suggested that superstitions are related to adaptive, beneficial personality functioning (Keinan, 2002; Neil, 1980; Rothbaum et al., 1982; Womack, 1979) rather than to less effective functioning, as indicated by the results of Tobacyk and Schrader (1991).

More precisely, as discussed previously, some of these previous assumptions and findings point to beneficial psychological benefits of superstitions that seem to be very similar to the presently examined concept of self-efficacy and control. Self-efficacy has been linked with perceived control because athletes need to believe that they are in control, and can deliberately activate superstitious rituals for self-efficacy to develop and to feel in control.

Rudski (2001), for example, found a positive relation between superstition and perceived confidence in future performance. Dudley (1999) and Matute (1994) demonstrated an effect of superstition on perceived feelings of controllability. Moreover, Day and Maltby (2003, 2005) suggested a positive correlation between belief in good luck and hope, optimism and psychological well-being. Looking back at these previous results it seems that all of them assessed individual aspects of the self-efficacy construct, which is central in the TCTSA. In this regard, the findings of the present research are the first to test portions of an established theory of anxiety to explain superstitious and religious experiences of elite footballers' careers, and to examine when and how superstition and religion become evident in their career life. Elite athletes' engagement in superstitious and religious rituals may serve as a source of confidence which has the propensity to migrate them from a threat state to a challenge state.

### ***Goals***

An athlete's achievement behaviours in evaluative settings represent motives for participating in sport (Jones et al., 2009). A great deal of research has demonstrated that beliefs of self-efficacy affect the types of goals that people set (Zimmerman, 2005). More specifically, previous findings indicate that individuals who feel capable of performing a particular task are likely to set more challenging and more specific goals than individuals with lower levels of perceived confidence (Bandura, 1986; Cleary & Zimmerman, 2001; Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992). These findings are important, as goal-setting theory predicts that particularly challenging and specific goals lead to the most positive outcomes (Locke & Latham, 1990). From this perspective, it appears possible that athletes who gain higher self-efficacy by engaging in

superstitious or religious rituals set higher and more career-specific goals for required performance and injury recovery, and thus may reach their targets and cope well with career uncertainties. Hence, they will be in a position to treat potential stress-inducing situations as challenge states rather than threat states.

## **Implication for future studies**

Undoubtedly, the present findings are unique in their contribution to a deeper understanding of how superstitions are developed and their consequences to the athlete. The present research presents some novel findings that have not been evaluated before. First, the reported results indicate how superstitious behaviours are developed and maintained by professional athletes, and what functional or dysfunctional effects such rituals can have on individual athletes and the team as whole. Personal superstition causes greater enhancement of performance in a subsequent achievement task, compared to conforming superstitions. Second, the present findings repeatedly demonstrate that activation of superstitions helps elite athletes cope with career uncertainties. Finally, the present data suggest that different types of superstition serve different psychological functions.

The current study also raises further questions that might be examined in future research. One of these questions concerns the core mechanism through which the tenets of the TCTSA can enhance performance with the aid of superstitions. In fact, existing literature on superstitions has recently speculated about the use of superstitions as a confidence-breeding phenomenon and coping mechanism. It is essential that future studies use established theories of anxiety to examine superstition in sports, especially providing empirical findings to establish causes and mediating effects of tenets of the TCTSA. Furthermore, the effects of superstition on self-efficacy, perceived control and goals and its influence on performance outcome needs to be empirically tested.



A second possible issue for future research would be the integration of the physiological changes with other psychological tenets of the TCTSA. Based on previous studies by Skinner and Brewer (2004), challenge and threat states are associated with distinct emotional and physiological states. In the TCTSA, Jones et al. (2009) incorporate the physiological responses outlined in the BPS model, with the more detailed emotional responses outlined in the model of adaptive approaches to competition. Hence, it will be interesting to examine how superstition as a dispositional variable within the biopsychosocial (BPS) model (Blascovich & Mendes, 2000) would enhance our understanding of the mechanism in relations to the TCTSA. In addition to looking at the effect of superstition on psychological and physiological outcomes, it would also be interesting to look at the effect of superstition on emotional outcomes.

Another promising direction of research might concern the question of whether the consequences of superstition in the present studies account for all kinds of superstitions in a team environment. In addition, clear example would raise doubts as to whether this distinction is always as clear as previously discussed. Examples of positive superstitions like knocking on wood, a rabbit's foot and the sign of the cross it seems rather easy to categorise the belief as belonging to the positive superstitions rather than the intent and consequences of the actual belief. However, given a lucky charm, for example, one might wonder whether this very common superstition should be allotted to the good-luck-bringing or the bad-luck-avoiding kind of superstition. Superstition may varies depending on the individual's religious background and social orientation. In fact, it seems possible that superstition purpose differs between individuals and societies. Similarly, it might even be possible that the meaning of such a particular superstition changes over time. A lucky

charm that was believed to bring an extra bit of good luck in the beginning of an athletic career, for example, might later be worn to competitions in order to prevent failures or injuries due to depositional factors such as change of club, environment and knowledge of new faith or religious beliefs. Essentially, the borders between these two forms seem to be blurred, as on a more general level, both positive and negative superstitions are directed towards good luck and bad luck, respectively. Nonetheless, it might be interesting for future research to more explicitly examine the consequences of the various types of superstitions on the subsequent performance of the individual athlete, the individual athlete within the team and the team as whole. In the light of the results reported here, one might predict that these kinds of superstitions serve different psychological functions. Further research may be conducted to address this question. In addition, there is a need for future investigators to establish which types of superstition are likely to migrate an athlete from a threat state to a challenge state and vice versa.

Unfortunately, researchers have not been able to assess specific religious rituals and the degree to which they will elicit superstitious beliefs, and some have found that religious preference (Fox, 1992) and religious orientation (MacDonald, 1992) are not related to reported superstitious experiences. It can be argued that religious traditions and cultural systems could be influential factors in explaining the current findings. Other findings supported a positive significant relationship between negative and positive superstitious beliefs. These findings justified our use of different measurement scales for superstitious behaviour and beliefs.

Researchers on superstition in sports suggest that whereas athletes frequently use superstitious strategies (e.g., praying, clothing rituals and lucky charms) in situations of

uncertainty and low control, they generally use prayers (religious ritual) and lucky charms (positive superstitious beliefs). It can be argued that positive superstitions have an influential effect on the demand and appraisal resources available to the individual. This may cause the individual to see the stressful situation as a challenge state in the TCTSA, where a highly intense positive emotion is experienced. Athletes with such emotions are unlikely to experience psychological tension and stressors. Furthermore, those who adopt acceptance as a coping mechanism are more likely to engage in positive superstition beliefs. Thus, those who have positive superstitious beliefs are able to perceive a stressful situation as being under their control. This is consistent with Jones et al.'s (2009) assertion that high levels of perceived control are related to a challenge state. This perceived high level of control may be gained from the confidence resulting from the athlete's positive superstitious beliefs. Again, more research is needed to explore this possibility further.

As is evident from Study 2, a weaker belief in God-mediated control also indicated fewer prayer-related rituals. Another possible explanation for the less patronage of prayer-related rituals is the shame that is associated with superstitious behaviour, especially for those who belongs to the main dominant religions (Christians, Muslims, Jews and others). It can also be suggested that religion can manage to suppress superstitious beliefs among people whose religious affiliations seem to predispose them to these beliefs. Burhmann and Zaugg (1983) found that superstitious beliefs and practices were directly correlated with church attendance. In an earlier study, Buhrmann and Zaugg (1981) also found an association between church attendance and prayer-related rituals. The athletes in this earlier study indicated less of a belief in a "higher being" as a mediator of control (as indicated by higher scores on the BPCS), and used fewer prayer rituals. However, students who had a

higher belief in mediated control by God (indicated by lower scores on the BPCS) had stronger superstitious beliefs (positive and negative). This confirms Orenstein's (2002) findings that religious belief has a stronger association with paranormal belief than does religious participation. A possible explanation for this may be that their stronger belief in or recognition of superstitious beliefs has influenced their faith in God, so as to prevent them from experiencing any bad luck, and vice versa. This warrants investigation into why someone who has a strong belief in God will still entertain superstitious beliefs.

From Study 3 and Study 4, it must be stressed that the players derived their prayers and other rituals from their religion. One conclusion of the present study is that superstitious beliefs and behaviours are profoundly religious in nature. The majority of the participants in the present study claim that some their rituals are religious in nature or are based on their family's religion, which they were socialised into. These data come close to the assertion that some amount of religious belief is a necessary condition for superstitious beliefs and behaviours. The participants attributed their rituals to religious beliefs as one of the most important sources of their rituals. Unlike past research on religiosity and superstition that did not yield consistent findings on their relationship (e.g., Buhrmann & Zaugg, 1983; Ellis, 1988), the present results show support for Orenstein's (2002) assertion that some amount of religious belief is a necessary condition for sports rituals. This finding is inconsistent with Jones, Russell, and Nickel's (1977) findings that no relationship exists between paranormal or superstitious beliefs and religiosity. This calls for clearer distinctions among anomalous or paranormal beliefs and religious beliefs, as Tobacyk and Milford (1983) and Grimmer and White (1992) made in separating traditional religion from unproven beliefs. The relationship between religious beliefs and superstition has been

confusing and inconsistent (Orenstein, 2002). Participants who prayed and engaged in other rituals before games and in difficult situations claimed these rituals formed part of their religious practices. The current results suggest that the religion of an athlete influences the type of rituals he will engage in.

In contradiction with the conclusion of Bleak and Frederick (1998), which found that religiosity, locus of control, importance of success and anxiety do not contribute meaningfully to the level of superstitious ritual usage, this study made a preliminary attempt to determine why superstitious rituals are developed and maintained by elite footballers. This study confirms that previous research and theory has indicated that religiosity (Buhrmann & Zaugg, 1983), importance of success and alleviation of anxiety (Womack, 1992) and personal control (Burke et al., 2006) are all factors which may facilitate the use of superstitious behaviours in sport contexts. The present study found support for athletes' motives for ritual use and all of the above mentioned factors. Judging from these results, it can be concluded that in stressful, uncertain and anxious contexts, athletes are likely to involve rituals in their attempts to cope with the situation. The inherent sense of control that emerges from repetitive fixed-action patterns makes rituals particularly receptive to associated magical beliefs about the power of ritual performance to influence social and environmental conditions (Rappaport, 1999). Future research needs to ascertain whether superstitious beliefs are a functional alternative to religion.

In summary, future research should aim to develop a broader measure of belief that encompasses wider and more diverse forms of superstition. Future research is needed to evaluate the potential mediating effect of the traditional family's role on attitudes towards superstitious beliefs. Again, there is also the need to distinguish between religion and

superstitious beliefs, and their role as a secondary control strategy used by athletes as a buffer when they have limited control. There is clearly a need for a more refined understanding of the psychological functions of different types of superstition and religion, and especially which types of superstition help athletes to regain control, enhance self-efficacy and advance approach goals. Elite athletes may be reluctant or shy to discuss their rituals while their careers are still on-going because of the fear that their rituals may lose its efficacy. Nevertheless, it would be desirable for future research to complement this work by examining actual behaviour; perhaps by using alternative means to capture the behaviour and interrogate it.

## **Applied implications**

The present study, like recent studies by Van Schippers (2006) and Ofori et al. (2012), appears to have dispelled numerous myths concerning the relevance and usefulness of superstition in sports. Part of this process has been the researcher's interest in the phenomenon and the athletes' willingness to discuss their superstitious rituals. Hence, research on superstition necessarily seems to call for practical implications. For example, an athlete who engages in a pre-game ritual before entering the field of play may recognise it as a religious rite and may feel better. This rite may be in fulfilment of a religious obligation, and it may calm his nerves and help through the worrisome moments before the performance begins. Thus, the athlete's ritual is reasonable and beneficial, but observers may term it as superstition. Although one should always bear in mind that superstitions are no remedy, the applications of superstitions nevertheless seem plausible for both amateur and professional athletes. At the professional level, for example, it seems crucial to promote mental skills training to deal with the high level of pressure. Many studies suggest new ways to remove superstitious behaviour, provide ways of coping, and suggest introduction of a pre-performance routine (Foster & Weigand, 2006), coping strategies (Finch & Jackson, 1993), how imagery could manipulate athletes' appraisal of stress-evoking situations (Williams, Cumming, & Balanos, 2010). The present thesis provides an interesting perspective by supporting athletes, based on their own personal superstitious beliefs, to help them cope with their career uncertainties and enhance their performance.

Practitioners and researchers have traditionally neglected to examine individual differences and cultural and superstitious beliefs to improve athletes' coping skills. The present study acknowledged the unique contributions that culture, gender, age and ethnicity can make in the activation of superstitious beliefs (positive and negative) and behaviour. It is important to further determine the reasons for athletes' usage of superstitious rituals, the type of superstitious beliefs and their effects on sport performance, and how they can be incorporated into athletes' coping and control strategies.

The present findings contradict most models of coping that are centred on individualistic approaches and generally give little credence to social aspects (e.g., Lazarus & Folkman, 1984; Pearlin & Schooler, 1978). The results departed from Dunahoo et al. (1998) description of individualistic approaches to coping process as "Lone Ranger, 'man against the elements' perspective" and fails to address the individual as part of a society. Participants bring their worldview to the coping process, as their social context has a bearing on demand appraisal. The communal perspective is contained in the prosocial-antisocial dimension and refers to coping responses that are influenced by and made in reaction to the social context. The applied implication is that practitioners may take into consideration the social environment of an athlete before designing a coping strategy for him or her.

This is not to say that athletes and practitioners should create an understanding of their world that is built on superstitious rituals. They shouldn't think that activation of superstition will always aid them in dealing with career uncertainties and enhancing performance. The present results do not indicate, for example, that the perceived psychological functions derived from superstition somehow supersede the impact of



knowledge, skill and ability. Nevertheless, an activated personal superstition might facilitate performance more than a conforming superstitions, within the given limits of existing abilities. In this regard, an enactment of personal superstitions prior to a game might represent a helpful technique to overcome feelings of anxiety and insecurity, bring good luck and boost assurance in one's own capabilities than a superstition that is imposed on the athlete. As the results suggest, imposition of superstitions on athletes may impair performance.

It is also essential for practitioners and sports scientists who wish to encourage or create team rituals to take into consideration the source of the ritual and the individual athletes' personal beliefs. Athletes prefer to own their own superstition behaviours and, in extreme cases where they have to conform to or engage in a team ritual, its source was as important as the rationale behind it. This contradiction between an athlete's personal beliefs and the source of the team ritual may give rise to cognitive dissonance. This state of dissonance may affect the athlete's concentration during the game, since they may attribute a mistake to a ritual that was forced on them.

As outlined above, many people already seem to have embraced the strategy of activating their own personal superstition prior to an achievement task in order to bring about the best possible results. Elite athletes especially seem to adopt this promising approach. However, even within this population one can find differences in the popularity of superstitions. Thus, previous research has demonstrated a positive correlation between the number of exhibited superstitions and the level of athletic ability (Buhrmann & Zaugg, 1981). The present results are in line with Buhrmann and Zaugg's findings, as this positive correlation

might actually indicate that those who activate their personal superstitions perform better than those who do not engage in superstitious thoughts or behaviours.

## **Limitations**

More so, the presence of interviewer bias, social desirability, and problems associated with self-report might have influence the outcome of the present study. It can be suggested that some of the interview questions might have led to certain answers that were compatible with the research aims. This concern may be exacerbated by the use of deductive and inductive content analysis.

The social desirability effect, in which a participant offers information that they think is compatible with the interviewer's expectations, as well as inherent limitations of self-reporting, can represent other areas of potential contamination in superstition in sports research, particularly involving personal beliefs. The notion among athletes that superstition is a shameful act, and also the myth that superstition, when discussed, loses its effectiveness might have skewed the findings of this study. However, the trust built with participants, world class athletes' involvement in superstitious and religious rituals, examples that were given and proper interview techniques that were adopted controlled some of these problems.

In sum, despite these limitations, the present findings provide initial evidence for a causal relationship between personal and conforming superstition and performance. Specifically, this study demonstrates that the adoption of personal superstitions in the face of uncontrollable achievement tasks improves performance, while conforming superstitions lead to the impairment of task performance.

## Conclusions

This study illustrates the importance and utility of distinguishing between superstitious behaviour, and negative and positive aspects of superstitious beliefs. Although there was a relationship between them, different control strategies, coping mechanisms and personal control measures predicted superstitious behaviour. This gives an indication that they may serve different functions based on the individual's psycho-social upbringing. It can also be concluded that gender and ethnicity influence the use of superstition as a secondary control strategy and coping process in sports. It was also evident that in our contemporary society, superstition does not reflect low intelligence and is not a product of primitive cultures. The present study has contributed to research on superstition by demonstrating that such beliefs and behaviours are still prevalent and are not a product of primitive cultures. There are many examples of magical thinking and superstitions whose particular expressions are culture-related. As an example of distinct cultural contagion beliefs, Rozin and Nemeroff (2002) cite that Japanese family members often share their bath water, whereas Western cultures find such a practice disgusting, ostensibly succumbing to the law of contagion. There is a description of a principle believed to underlie a set of beliefs in traditional cultures. Essentially, it holds that, when two objects touch (especially when they are of an animate nature), they pass on properties to one another. This influence on the contacted object may be permanent; hence, the principle was summarised as "once in contact, always in contact" (for reviews of this law see Rozin & Nemeroff, 1990). Thus, superstition is common across cultures and professions, and it is not maladaptive or a product of abnormal behaviour.

In particular, the results suggest that people may enact their positive superstitious beliefs and religion as a coping mechanism and as a secondary control strategy to offer themselves the comfort of feeling in control under conditions of impending failure. Accordingly, positive superstitious beliefs might result from a person enacting a positive reappraisal of a situation. It can be deduced from the present findings that people are likely to engage in positive superstitions only when skill or actual ability to control outcomes (primary control) is low, and to cope with the stress of impending failure. Beliefs in positive superstitions could have their basis in quite different mechanisms, such as the promotion of self-efficacy and optimism, as posited by Wiseman and Watt (2004). This might be one of the reasons why both secondary control strategies (lowering aspirations and positive reappraisal) predicted positive superstitious beliefs but not negative superstitious beliefs. This assertion that secondary control may function as a buffer against negative affect or under conditions of low primary control is only applicable when the secondary control strategies are concerned with positive superstitious beliefs. More recently, US soldiers driving tanks in the current Iraq war refused to eat apricots, believing they brought bad luck (Phillips, 2003). This suggests that the notion of superstitions cut across professions, and in all profession individuals avoid superstitious acts or objects that can elicit bad luck. The present research has extended research in the area by establishing the relationships between types of superstition beliefs and their functions.

In sport, there is emerging evidence to suggest that some athletes use religious practices, including prayer, as both a coping mechanism to deal with stress and anxiety and to facilitate performance enhancement (Czech et al., 2004; Park, 2002). The effectiveness of such practices is currently unclear, but research is needed to compare the effects of prayer

against more traditional approaches to dealing with stress and anxiety in sport, using both religious and non-religious participants (to control for belief). Researchers should also be prepared to compare and contrast physiological, biochemical, affective and neurological data in order to explore possible mechanisms to explain any observed changes. Taken together, the present findings and the most recent literature suggest that superstitious believers are just as likely to use cognitive reframing techniques to alter event perceptions, just as likely to shy away from facing up to their problems, and just as likely to take direct action to overcome or eliminate their problems (cf. Endler & Parker, 1994, 1999; Holahan & Moos, 1987). Irrespective of the maladaptive description that has characterised superstitious believers, one possibility is that superstitious coping reflects a unique coping style (Callaghan & Irwin, 2003; cf. Endler & Parker, 1994, 1999) rather than a strategy (Holahan & Moos, 1987).

Moreover, one should keep in mind that in Study 1, superstition was prevalent among Ghanaian and British students. Study 2 established the predictors and relationship between individual personality variables and superstition. Study 3 identified the sources of superstition and suggested that religious or superstitious rituals can reduce anxiety when stressors are unpredictable and uncontrollable (threat state), and are commonly called on as a coping mechanism. The sources of superstitions and rituals were socialisation, conformity, obedience to authority, half-beliefs and religiosity. This finding, if continually supported in future studies, may constitute important information for coaches and sport psychologists to take into consideration when planning team activities, in terms of room allocations, team building programmes, and dealing with expectations in terms of the religions and beliefs systems of athletes from different cultures.

Understanding the factors that influence an individual and his/her beliefs regarding superstitions, as well as the reasons for the behaviour, can facilitate a professional's ability to work with that athlete to deal with threat and uncertainty in their career. While uncertainty is often seen as a positive, challenging aspect of sports participation, many athletes' inability to deal with uncertainty or unpredictability in sport can have adverse effects on their performance and career goals attainment. Because superstitious behaviour and beliefs are so prominent in sports, and often encouraged or imposed on athletes and engaged in by coaches, teammates and spectators, it behoves sport scientists to better understand the short- and long-term effects of and reasons for participating and believing in these seemingly deceptively, innocuous behaviours. More importantly, further research into how elite athletes develop and maintain superstitious and religious rituals and when these rituals become useful and dysfunctional in their professional careers is needed.

This research provides an exposition of superstitious beliefs and behaviours and their potential impact on performance, based on their sources. Such a discussion is warranted by the fact that research on benefits of superstitions has started appearing in psychology and sports journals, yet terms have been inconsistently applied, and investigations into differential consequences on performance (functional or dysfunctional) in sport psychology are scarce. The present study started by defining and distinguishing between types of superstitious beliefs and establishing cross-cultural differences that exist between British and Ghanaian student athletes. The superstitious beliefs that are prevalent in both cultures are relevant in aiding sport psychology researchers in the advancement of theories in the field. This research has advanced a framework to illuminate how superstitions are developed and maintained using an existing theory of anxiety by Jones et al. called the

Theory of Threat and Challenge States in athletes. It came up with propositions that extend the theory on superstitions in sports in a way that elicited the functional and dysfunctional consequences of superstition to athletes. The present study has extended the literature on superstitions in sport by providing the first instantiation of the consequences of conforming superstitions on elite athletes' performance, thus demonstrating the negative impact of conforming superstitions to the individual athlete and team.

In sum, despite the limitations, the presented findings provide initial evidence for a causal relationship between personal superstition and performance. Specifically, these studies demonstrate that the adoption of superstitions in the face of uncontrollable achievement tasks prevents the impairment of task performance. More research is needed to explore these relationships further.



## REFERENCES

- Abercrombie, N, Baker, J., Brett, S., & Foster, J. (1970). 1970 'Superstition and Religion: the God of the Gaps', *A Sociological Yearbook of Religion in Britain* 3, London: SCM Press.
- Abramson, L. Y, Seligman, M. E. P., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology*, 87, 49-74.
- Adie, J. W., Duda, J. L., & Ntoumanis, N. (2008). Autonomy support, basic need satisfaction, and the optimal functioning of adult male and female sport participants: A test of basic needs theory. *Motivation and Emotion*, 32, 189-199.
- Adorno, T. W., Frenkel-Brunswik, E., Levinson, D.J., Sanford, R. N. (1950). *The Authoritarian Personality*. Norton: NY
- Ajzen, I. (1991). "The theory of planned behavior". *Organizational Behavior and Human Decision Processes* 50 (2): 179-211.
- Albas, D., & Albas, C. (1989). Modern magic: The case of examinations. *Sociological Quarterly*, 30, 603-613.
- Alcock, J. E. (1981). *Parapsychology: Science or magic?* Oxford: Pergamon.
- Alcock, J. E., & Otis, L. P. (1980). Critical thinking and belief in the paranormal among Americans. *Gallup News Service*, 55, 1-7.
- Anshel, M. H., (2000). A conceptual model and implications for coping with stressful events in police work. *Criminal Justice Beh.*, 27, 375-400. *Anxiety, Stress & Coping*, 11, 137-165.

- Arnett, J. (1992b). Socialization and adolescent reckless behaviour: A reply to Jessor. *Develop Rev.* 12, 391-409.
- Aspinwall, L. G., & Staudinger, U.M. (Eds.). (2003). *A psychology of human strengths: Fundamental questions and future directions for a positive psychology*. Washington, DC: American Psychological Association.
- Backstrom, C. H. and Hursch-Cesar, G. (1881). *Survey Research 2nd ed.* New York: John Wiley and Sons.
- Bagnato, A. (1997). Very Superstitious. *Sporting News*, 221, 41.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Baumeister, F. R., and Heatherton F. T. (1996) Self-Regulation Failure: An Overview *Psychological Inquiry*, 7, (1), 1-15.
- Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing Control: How and Why People Fail at Self-Regulation*. San Diego, CA: Academic Press.
- Becker, J. (1975). Superstition in sport. *International Journal of Sport Psychology*, 6, 148-152.
- Berrenberg, J. L. (1987). The Belief in Personal Control Scale: A measure of God-mediated and exaggerated control. *Journal of Personality Assessment*, 51, 194-206.

- Bersabe, R., & Martínez Arias, R. (2000). Superstition in gambling. *Psychology in Spain*, 4, 28–34.
- Blascovich, J., & Mendes, W. B. (2000). Challenge and threat appraisals: The role of affective cues. In J. Forgas (Ed.), *Feeling and thinking: The role of affect in social cognition* (pp. 59-82). Paris: Cambridge University Press.
- Blascovich, J., & Tomaka, J. (1996). The biopsychosocial model of arousal regulation. *Advances in Experimental Social Psychology*, 28, 1-51.
- Blascovich, J., Mendes, W. B., Tomaka, J., Salomon, K., & Seery, M.D. (2003). The robust nature of the biopsychosocial model of challenge and threat: A reply to Wright and Kirby. *Personality and Social Psychology Review*, 7, 234-243.
- Blascovich, J., Seery, M. D., Mugridge, C. A., Norris, R. K., & Weisbuch, M. (2004). Predicting athletic performance from cardiovascular indexes of challenge and threat. *Journal of Experimental Social Psychology*, 40, 683–688.
- Bleak, J. L. & Frederick, C. M. (1998). Superstitious behavior in sport: Levels of effectiveness and determinants of use in three collegiate sports. *Journal of Sport Behavior*, 21, 1-15
- Block, L., & Kramer T. (2009). “The Effect of Superstitious Beliefs on Performance Expectations,” *Journal of the Academy of Marketing Science*, 37(2), 161-169.
- Bonetti, D., & Johnston, M. (2008). Perceived control predicting the recovery of individual-specific walking behaviours following stroke: testing psychological models and constructs. *British Journal of Health Psychology*, 13, 463-478.
- Boshier, R. (1973a). An empirical investigation of the relationship between conservatism and superstition. *British Journal of Social and Clinical Psychology*, 12, 262-267.

- Boshier, R. (1973b). Conservatism and superstitious behavior. In G. D. Wilson (Ed.), *The psychology of conservatism* (pp. 149-159). London: Academic Press.
- Buhrmann, H. G. & Zaugg, M. K. (1981). Superstitions among basketball players: An investigation of various forms of superstitious beliefs and behavior among competitive basketballers at the junior high school to university level. *Journal of Sport Behavior*, 4, 163-174.
- Buhrmann, H. G. & Zaugg, M. K. (1983). Religion and superstition in the sport of basketball. *Journal of Sport Behavior*, 6, 146-157.
- Burger, J. M., & Lynn, A. L. (2005). Superstitious behavior among American and Japanese professional baseball players. *Basic and Applied Social Psychology*, 27, 71-76.
- Burger, J. M. (1986). Desire for control and the illusion of control: The effects of familiarity and sequence outcomes. *Journal of Research in Personality*, 20, 66-76.
- Burger, J. M. (1989). Negative reactions to increases in perceived personal control. *Journal of Personality and Social Psychology*, 56, 246-256.
- Burke, K. L., Czech, D. R., Knight, J. L., Scott, L. A., Joyner, A. B., Benton, S. G., & Roughton, H. K. (2006). An exploratory investigation of superstition, personal control, optimism and pessimism in NCAA Division I intercollegiate student-athletes. *Athletic Insight: The Online Journal of Sport Psychology*, 8 (2). Retrieved from <http://www.athleticinsight.com/Vol8Iss2/Superstition.htm>
- Burke, M. J., Scheurer, M. L., & Meredith, R. J. (2007). A dialogical approach to skill development: The case of safety and health skills. *Human Resource Management Review*, 17, 235-250.
- Buss, D. M. (2000). *The dangerous passion: Why jealousy is as necessary as love and sex*. New York: Free Press.

- Callaghan, A., & Irwin, H. J. (2003). Paranormal belief as a psychological coping mechanism. *Journal of the Society for Psychical Research*, 67(872), 200–207.
- Campbell, C. (1996). Half-belief and the paradox of ritual instrumental activism: A theory of modern superstition. *British Journal of Sociology*, 47, 151-166.
- Carver, C. S. (1997). “You want to measure coping but your protocol's too long: Consider the Brief COPE.” *International Journal of Behavioral Medicine*, 4, 92-100.
- Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control theory approach to human behavior*. New York, NY: Springer-Verlag.
- Carver, C. S., & Scheier, M. F. (2002). Control processes and self-organization as complementary principle underlying behavior. *Personality & Social Psychology Review*, 6, 304-316.
- Carver, C. S., & Scheier, M. F. (2002). Optimism. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 231-243). New York: Oxford University Press.
- Case, T. I., Fitness, J., Cairns, D. R., & Stevenson, R. J. (2004). Coping with uncertainty: Superstitious strategies and secondary control. *Journal of Applied Social Psychology*, 34, 848-871.
- Catania, A. C. (1992). *Learning* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.
- Catania, A. C., & Cutts, D. (1963). Experimental control of superstitious responding in humans. *Journal of the Experimental Analysis of Behavior*, 6, 203-208.
- Camber, R., & Newling, D. (2007, July 03). Superstitions that serve me well, by Serena Williams. *Mail Online*, pp. A1, A5.

- Cerin, E., Szabo, A., Hunt, N., & Williams, C. (2000). Temporal patterning of competitive emotions: A critical review. *Journal of Sports Sciences, 18*, 605-626.
- Cerutti, D. T. (1991). Discriminative versus reinforcing properties of schedules as determinants of schedule insensitivity in humans. *The Psychological Record, 41*, 51-67.
- Ciborowski, T. (1997). "Superstition" in the collegiate baseball player. *The Sport Psychologist, 11*, 305-317.
- Clare, L. (2002) Developing awareness about awareness in early-stage dementia: the role of psychosocial factors. *Dementia 1*: 295-312.
- Clark, D. (1982). *Between Pulpit and Pew*. Cambridge: Cambridge University Press.
- Clarke, D. (1991). Belief in the paranormal: A New Zealand survey. *Journal of the Society for Psychical Research, 57*, 412-425.
- Cleary, T. J., & Zimmerman, B. J. (2001). Self-regulation differences during athletic practice by experts, non-experts, and novices. *Journal of Applied Sport Psychology, 13*, 185-206.
- Coakley, J. (2001). *Sport in Society: Issues and Controversies*, 7<sup>th</sup> Ed. New York, NY: McGraw-Hill.
- Coakley, J.J. (2003). *Sport in society* (8<sup>th</sup> Ed.). Boston: Irwin McGraw-Hill.
- Coffee, P., & Rees, T. (2008). Main and interactive effects of controllability and generalizability attributions upon self-efficacy. *Psychology of Sport and Exercise, 9*, 775-785. doi: 10.1016/j.psychsport.2007.12.002

- Coffee, P., & Rees, T. (2008). The CSGU: A measure of controllability, stability, globality, and universality attributions. *Journal of Sport & Exercise Psychology, 30* (5), pp. 611-641.
- Coffee, P., Rees, T., & Haslam, S. A. (2009). Bouncing back from failure: The interactive impact of perceived controllability and stability on self-efficacy beliefs and future task performance. *Journal of Sports Sciences, 27*, 1117-1124. doi: 10.1080/02640410903030297
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). Applied multiple regression/correlation analysis for the behavioral sciences. Hillsdale, NJ: Erlbaum
- Cohen, J. W. (1988). Statistical power analysis for the behavioural sciences (2nd edn). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cohn, P. J. (1990). Preperformance routines in sport: Theoretical support and practical applications. *The Sport Psychologist, 4*, 301-312.
- Conklin, E. S. (1919). Superstitious belief and practice among college students. *American Journal of Psychology, 30*, 83-102.
- Conner, M., & Sparks, P. (1996). The theory of planned behaviour and health behaviours. In M. Conner & P. Norman (Eds.), *Predicting health behaviour* (pp. 121-162). Buckingham: Open University Press.
- Conroy, D. E., Elliot, A. J., & Hofer, S. M. (2003). A 2 x 2 achievement goals questionnaire for sport. *Journal of Sport and Exercise Psychology, 25*, 456-476.
- Conroy, D. E., Kaye, M. P., & Schantz, L. H. (2008). Quantitative research methodology.

- In T. S. Horn (Ed.), *Advances in sport psychology* (3<sup>rd</sup> ed., pp. 15-30). Champaign, IL: Human Kinetics.
- Corrigan, R. S., Pattison, L., & Lester, D. (1980). Superstition in police officers. *Psychological Reports, 46*, 830.
- Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five designs*. Thousand Oaks, CA: Sage.
- Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In D.T. Gilbert, S.T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 504–553). Boston: McGraw- Hill.
- Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*(4) 349-354.
- Csikszentmihályi, M. (1975). *Beyond Boredom and Anxiety*, San Francisco, CA: Jossey-Bass.
- Culver, D., Gilbert, W. & Trudel, P. (2003) A decade of qualitative research in sport psychology journals: 1990-1999, *The Sport Psychologist, 17*, 1-15.
- Cumming, J., Olphin, T., & Law, M. (2007). Self-reported psychological states and physiological responses to different types of motivational general imagery. *Journal of Sport & Exercise Psychology, 29*, 629–644.
- Czech, D. R., Ploszay, A. J., & Burke, K. L. (2004). An examination of the maintenance of pre shot routines in basketball free throw shooting. *Journal of Sport Behavior, 27*, 323-329.



- Czech, D. R., Wrisberg, C., Fisher, L., Thompson, C., & Hayes, G. (2004). The experience of Christian prayer in sport- An Existential Phenomenological Investigation. *Journal of Psychology and Christianity, 2*, 1-19.
- Dag, I. (1999). The relationships among paranormal beliefs, locus of control and psychopathology in a Turkish college sample. *Personality and Individual Differences, 26*, 723-737.
- Damisch L, Stoberock B, and Mussweiler T. (2010). Keep Your Fingers Crossed! How Superstition Improves Performance. *Psychological Science 21*(7) 1014– 1020
- Darke, P. R., & Freedman, J. L. (1997a). The belief in good luck scale. *Journal of Research in Personality, 31*, 486-511.
- Darke, P. R., & Freedman, J. L. (1997b). Lucky events and beliefs in luck: Paradoxical effects on confidence and risk-taking. *Personality and Social Psychology Bulletin, 23*, 378-388.
- Day, L., & Maltby, J. (2003). Belief in good luck and psychological well-being: The mediating role of optimism and irrational beliefs. *The Journal of Psychology, 137*, 99-110.
- Day, L., & Maltby, J. (2005). "With good luck": Belief in good luck and cognitive planning. *Personality and Individual Differences, 39*, 1217-1226.
- Day, L., & Maltby, J. (2005). "With good luck": Belief in good luck and cognitive planning. *Development* (pp. 79-123). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Douglas, M. (1966). *Purity and danger*. London: Routledge and Kegan Paul.
- Dudley, T. R. (1999). The effect of superstitious belief on performance following an unsolvable problem. *Personality and Individual Differences, 26*, 1057-1065.

- Dunahoo, C. L., Hobfoll, S. E., Monnier, J., Hulsizer, M. R., & Johnson, R. (1998). There's more than rugged individualism in coping. Part 1: Even the lone ranger had tonto. *Anxiety, Stress & Coping*, 11, 137-165.
- Dunleavy, A. O., & Miracle, A. W. (1979): "Understanding Ritual and Its Use in Sport"  
In: W. J. Morgan (ed.): Sport and the Humanities: A Collection of Essays.  
Knoxville: University of Tennessee Press.
- Dweck, C. S., Goetz, T. E., & Strauss, N. (1980). Sex differences in learned helplessness: (IV) An experimental and naturalistic study of failure generalization and its mediators. *Journal of Personality and Social Psychology*, 38, 441-452.
- Edis, T. (2000). The rationality of an illusion [Electronic Version]. *Humanist*, 60, 28-33.
- Elliot, F., & Rennie, D. L. (1999). Evolving guidelines for publication of qualitative research studies in psychology and related fields. *British Journal of Clinical Psychology*, 38, 215-229.
- Ellis, L. (1988) Religiosity and superstition: Are they related or separate phenomena?  
*Psychology: A Journal of Human Behavior*, 25(2), 12-13.
- Emme, E. E. (1940). Modification and origin of certain beliefs in superstition among 96 college students. *Journal of Psychology*, 10, 279-291.
- Emmons, C. F., & Sobal, J. (1981). Paranormal beliefs: Testing the marginality hypothesis. *Sociological Focus*, 14, 49-56.
- Emmons, C., Sobal, J., (1981). Paranormal beliefs: functional alternatives to mainstream religion? *Review of Religious Research*, 22, 301-312.

- Endler, N. S., & Parker, J. D. A. (1994). Assessment of multidimensional coping: Task emotion and avoidance strategies. *Psychological Assessment, 6*, 50-60.
- Endler, N. S., & Parker, J. D. A. (1999). *Coping inventory for stressful situations: Manual*. North Tonawanda, NY: Multi-Health Systems.
- Epstein, S. (1991). *Cognitive-experiential self-theory: implications for developmental psychology*. In M.R. Gunnar, A. L. Stroufe & L. A. Alan (Eds.), *Self-processes and Development* (pp. 79-123). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Epstein, S. (1993). *Implications of cognitive-experiential self-theory for personality and developmental psychology*. In D. Funder, R. Parke, C. Tomlinson-Keasey, & K. Widaman (Eds.), *Studying lives through time: Personality and development* (pp. 399- 438). Washington, DC: American Psychological Association.
- Farha, B. & Stewart, G. (2006). Paranormal beliefs: An analysis of college students. *Skeptical Inquirer, 30*(1), 8-9.
- Feather, N. T. (1969). Attribution of responsibility and valence of success and failure in relation to initial confidence and perceived locus of control. *Journal of Personality and Social Psychology, 13*, 129-144.
- Felson, R. B., & Gmelch, G. (1979). Uncertainty and the use of magic. *Current Anthropology, 20*, 587-589.
- Feltz, D. L., Short, S. E., & Sullivan, P. J. (2008). *Self-efficacy in sport*. Champaign, IL: Human Kinetics.
- Festinger, L. (1957). *A theory of cognitive dissonance*, Stanford, CA: Stanford University Press.

- Fisher S., (1986). *Stress and Strategy*. Lawrence Erlbaum Associates London and Hillsdale, N.J.
- Foster, D. J., Weigand, D. A., & Baines, D. (2006). The effect of removing superstitious behavior and introducing a pre-performance routine on basketball free-throw performance. *Journal of Applied Sport Psychology, 18*, 167-171.
- Foster, D.J. and Weigand, D.A. (2006). The Effect of Removing Superstitious Behavior and Introducing a Pre-Performance Routine on Basketball Free-Throw Performance. *Journal of Applied Psychology, 18*: 167–171,
- Fowler, J. W., (1995). *Stages of Faith: The Psychology of Human Development*. Harper Collins, USA.
- Fox, J.W. (1992). The structure, stability, and social antecedents of reported paranormal experiences. *Sociological Analysis, 53*:417-31.
- Frazer, J. (1890) 1955. *The Golden Bough: A Study in Magic and Religion*. 3d ed., rev. & enl. 13 vols. New York: St. Martins; London: Macmillan. An abridged edition was published in 1922 and reprinted in 1955.
- Friedland, N., Keinan, G., Regev, Y. (1992). Controlling the uncontrollable: Effects of stress on illusory perceptions of controllability. *Journal of Personality and Social Psychology, 63*(6), 923-931.
- Gallagher, T. J., & Lewis, J. M. (2001). Rationalists, fatalists, and the modern superstitious: Test taking in introductory sociology. *Sociological Inquiry, 71*, 1-12.
- Gallup, G. H., & Newport, F. (1990). Belief in the psychic and paranormal widespread among Americans. *Gallup News Service, 55*, 1-7.

- Gallup, G.H., Newport Jr., F., (1991). Belief in the paranormal among adult Americans. *Skeptical Inquirer*, 15, 137-147.
- Garfield, C. A., & Bennet, H. Z. (1984). *Peak performance: Mental training techniques of the world's greatest athletes*. Los Angeles, CA: Tarcher.
- Garwood, K. (1963). Superstition and Half belief. *New Society*, 18, 120-121.
- Giorgi, A., and Giorgi, B. (2003). The descriptive phenomenological psychological method. In P.M. Camic, J.E. Rhodes, and L. Yardley, (Eds.), *Qualitative research in psychology: Expanding perspectives in methodology and design* (pp. 243-273). Washington, D.C.: American Psychological Association.
- Glaser, B. and Strauss, A. (1967). *The discovery of grounded theory*. Chicago: Aldine.
- Glass, D. C., & Singer, J. E. (1973). Experimental studies of uncontrollable and unpredictable noise. *Representative Research in Social Psychology*, 4, 165-183.
- Glock, C.Y., & Stark, R., (1965). *Religion and Society in Tension*. Rand McNally, Chicago, IL.
- Gmelch, G. & Felson, R. (1980). Can a lucky charm get you through organic chemistry? *Psychology Today*, pp. 75-78.
- Gmelch, G. (1971). Baseball magic. In G. Stone (Ed.), *Games, sport and conflict* (pp. 346-352). Boston: Little Brown.

- Gmelch, G. (1974). Baseball magic. In J. Spradley and D. McCurdy (Eds.), *Conformity and conflict* (pp. 346-352). Boston: Little Brown.
- Goode, E. (2000). Two paranormals or two and a half? An empirical exploration. *Skeptical Inquirer*, 24, 29-35.
- Goode, E., 2000. *Paranormal Belief: A Sociological Introduction*. Waveland Press, Inc., Prospect Heights, IL.
- Gould, D., & Weiss, M. R. (1981). Effect of model similarity and model self-talk on self-efficacy in muscular endurance. *Journal of Sport Psychology*, 3, 17-29.
- Gould, D., Finch, L. M., & Jackson, S. A. (1993). Coping strategies used by national champion figure skaters. *Research Quarterly for Exercise and Sport*, 64, 453-468.
- Graham, S., & Weiner, B. (1996). *Theories and principles of motivation*. In D. C. Berliner & R. C. Calfee (Eds.), *Handbook of educational psychology* (pp. 63-84). New York: Simon & Schuster Macmillan.
- Gregory, C. J., & Petrie, B. M. (1972). *Superstition in Sport: Paper presented at Fourth Canadian Psychomotor Learning and Sports Psychology Symposium*, University of Waterloo.
- Gregory, J. C. & Petrie, B. M. (1975). Superstitions of Canadian intercollegiate athletes: An inter-sport comparison. *International Review of Sport Sociology*, 10, 59-68.
- Gregory, J. C. & Petrie, B. M. (1975). Superstitions of Canadian intercollegiate athletes: An inter-sport comparison. *International Review of Sport Sociology*, 10, 59-68.

- Gregory, J. C. (1973). *Superstitions among male and female intercollegiate athletes and non-athletes of the University of Western Ontario, 1971-1972*. Unpublished master's thesis, University of Western Ontario, Canada.
- Gregory, J. C., & Petrie, B. M. (1975). Superstitions of Canadian intercollegiate athletes: An inter-sport comparison. *International Review of Sport Sociology*, *10*, 59-68.
- Grimmer, M. R., & White, K. D. (1990). The structure of paranormal beliefs among Australian psychology students. *Journal of Psychology*, *124*, 357-370.
- Grimmer, M. R.; White, K. D. (1992). Nonconventional beliefs among Australian science and nonscience students. *Journal of Psychology*, *126*, 521-528.
- Groth-Marnat, G., & Pegden, J. (1998). Personality correlates of paranormal belief: Locus of control and sensation seeking. *Social Behavior and Personality*, *26*(3), 291-296.
- Hammersley, M. and Atkinson, P. (1995) *Ethnography: Principles in Practice*, (Second Edition), pp 263-287, London, Routledge.
- Haney, C.J. & Long, B. C. (1995). Coping effectiveness: A path Analysis of Self-efficacy, Control, Coping, and Performance in Sport Competitions. *Journal of Applied Sport Psychology*, *25*, 1726 -1746.
- Hanton, S., Mellalieu, S.D., & Hall, R.J. (2004). Protection Mechanisms: The Relationship between Self-Confidence and Anxiety Direction. *Psychology of Sport and Exercise*, *5*, 477-495.
- Harris, M. (1979). *Cultural Materialism* . New York: Random House.

- Heath, A. E. (1948). Probability, science and Superstition. *The rationalist Annual*, 39-46.
- Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review*, 102, 284-304.
- Heltzer, R. A., & Vyse, S. A. (1994). Intermittent consequences and problem solving: The experimental control of "superstitious" beliefs. *The Psychological Record*, 44, 155-169.
- Holland, J. C., Passik, S., Kash, K. M., Russak, S. M., Gronert, M. K., et al. (1999). The role of religious and spiritual beliefs in coping with malignant melanoma. *Psycho-Oncology*, 8(1), 14-26.
- Holahan, C. J., & Moos, R. H. (1987). Personal and contextual determinants of coping strategies. *Journal of Personality and Social Psychology*, 52(5), 946-955.
- Holt, N. L., & Sparkes, A. C. (2001). An ethnographic study of cohesiveness in a college soccer team over a season. *The Sport Psychologist*, 15, 237-259.
- Hughes, C. (2002). Medicine and magic [Electronic Version]. *Student BMJ*, 10, 132-133.
- Ingman, K.A., Ollendick, T.H., and Akande, A. (1999). Cross-cultural aspects of fears in African children and adolescents. *Behavior Research and Therapy*, 37, 337-345.
- Irwin, H. J. (1986). The relationship between locus of control and belief in the paranormal. *Parapsychological Journal of South Africa*, 7, 1-23.
- Irwin, H. J. (1989). On paranormal disbelief: The psychology of the sceptic. In G. K. Zollschan, J. F. Schumaker, & G. F. Walsh (Eds.), *Exploring the*



*Paranormal: Perspectives on Belief and Experience* (pp. 305-312). Bridport, UK: Prism Press.

Irwin, H. J. (1990a). Fantasy proneness and paranormal beliefs. *Psychological Reports*, 66, 655-658.

Irwin, H. J. (1990b). Parapsychology courses and students' belief in the paranormal. *Journal of the Society for Psychical Research*, 56, 266-272.

Irwin, H. J. (1993). Belief in the paranormal: A review of the empirical literature. *Journal of the American Society for Psychical Research*, 87(1), 1-39.

Irwin, H. J. (1994). Paranormal belief and proneness to dissociation. *Psychological Reports*, 75, 1344-1346.

Irwin, H. J. (2000). Belief in the paranormal and a sense of control over life. *European Journal of Parapsychology*, 15, 68-78.

Irwin, H.J., (2000). Age and sex differences in paranormal belief: a response to Vituli, Tipton, and Rowe 1999. *Psychological Reports*, 86, 595-596.

Jahoda, G. (1968). Scientific training and the persistence of traditional beliefs among West African university students. *Nature*, 220, 1356.

Jahoda, G. (1969). *The psychology of superstition*. London, Allen Lane: The Penguin Press.

Jahoda, G. (1970). Supernatural Beliefs and Changing Cognitive Structures among Ghanaian University Students. *Journal of Cross-Cultural Psychology*, 1, 115-130.

- Jahoda, G. (2007). Superstition and belief. *The Psychologist*, 20, 594-595.
- Jahoda, G., (1968). Scientific training and the persistence of traditional beliefs among West African university students. *Nature* , 220, 1356.
- Jahoda, G., (1970). *The Psychology of Superstition*. The Penguin Press, London.
- Janssen, J., Hart, J. de, & Draak, C. den (1990). A content analysis of the praying practices of Dutch youth. *Journal for the Scientific Study of Religion*, 29, 99-107.
- Jiang, Y., Cho, A., & Adaval, R. (2009). The unique consequences of feeling lucky: Implications for consumer behavior. *Journal of Consumer Psychology*, 19, 171-184.
- Johnson, M., & Pigliucci, M. (2004). Is knowledge of science associated with higher skepticism of pseudoscientific claims? *American Biology Teacher*, 66 (8), 536-548.
- Jones, G. (1995). More than just a game: research developments and issues in competitive anxiety in sport. *British Journal of Psychology*, 86, 449-478.
- Jones, G., & Swain, A. (1995). Predispositions to experience debilitating and facilitative anxiety in elite and non-elite performers. *The Sport Psychologist*, 9, 201-211.
- Jones, M.V., Meijen, C., McCarthy, P.J. & Sheffield, D. (2009). A theory of challenge and threat states in athletes. *International Review of Sport and Exercise Psychology*, 2, 161-180.
- Jones, W. H., & Russell, D. (1980). The selective processing of belief disconfirming information. *European Journal of Social Psychology*, 10, 309-312.

- Jones, W. H., Russell, D. W., & Nickel, T. W. (1977). Belief in the Paranormal Scale: An objective instrument to measure belief in magical phenomena and causes. *Journal Supplement Abstract Service, Catalogue of Selected Documents in Psychology, 7, 100 (MS 1577)*.
- Jueneman, F. B. (2001). *The making of a myth*. Research & Development, 43, 9-10.
- Kahneman, D., Slovic, P. and Tversky, A. (1982). *Judgment Under Uncertainty: Heuristics and Biases*, New York: Cambridge University Press.
- Kaiser, H. F. (1974) An index of factorial simplicity. *Psychometrika, 39*, 31-36.
- Keinan, G. (1994). Effects of stress and tolerance of ambiguity on magical thinking. *Journal of Personality and Social Psychology, 67*, 48-55.
- Keinan, G. (2002). The effects of stress and desire for control on superstitious behaviour. *Personality and Social Psychology Bulletin, 28(1)*, 102-108.
- Killeen, P. R. (1977). Superstition: A matter of bias, not detectability. *Science, 199*, 88-90.
- Koenig, H. G. (2009). Psychotic disorders. In Peteet R.J., Lu F., Narrow W.E. (eds), *Religious and Spiritual Issues in Psychiatric Diagnosis: A Research Agenda for DSM-V*. Washington, DC: American Psychiatric Publishing, Inc.
- Kosenthal, T. and B. Siegel 1959 Magic and Witchcraft: *An Interpretation from Dissonance Theory*. South western Jour.
- Kouabenan, D. R. (1998), Beliefs and the Perception of Risks and Accidents. *Risk Analysis, 18*, 243–252.

- Kramer, T., & Block, L. (2008), "Conscious and Non-Conscious Components of Superstitious Beliefs in Judgment and Decision-Making," *Journal of Consumer Research*, 36(4), 783-793.
- Lachmann, G. (2005). Wo bleiben Weisheit und Weihrauch?: Jeder Zweite ist abergläubisch. URL: <http://www.presseportal.de/meldung/760788/>. Retrieved 03/15/2008.
- Langer, E. J. (1975). The illusion control. *Journal of Personality and Social Psychology*, 32, 311-328.
- Langer, E. J., & Roth, J. (1975). Heads I win, tails its chance: The illusion of control as a function of the sequence of outcomes in a purely chance task. *Journal of Personality and Social Psychology*, 32, 951-955.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Lazarus, S. R. (1999) Social Research: An International Quarterly. Hope: An Emotion and a Vital Coping Resource Against Despair. *Social Research* 66(2):653-678
- Levin, J.S., Taylor, R.J., Chatters, L.M., 1994. Race and gender differences in religiosity among older adults: findings from four national surveys. *Journals of Gerontology*, 49, 137-145.
- Lewis, J. M., & Gallagher, T. J. (2001).The salience of Friday the 13th for college students [Electronic Version]. *College Student Journal*, 35(2), 216.
- Lincoln, Y., & Guba, E. (1985).*Naturalistic inquiry*. New York: Sage.
- Lobmeyer, D. & Wasserman, E. A. (1986). Preliminaries to free throw shooting: Superstitious behavior? *Journal of Sport Behavior*, 9, 70-78.

- Loewenthal, K.M., & Lewis, C.A. (2011). Mental health, religion and culture. *The Psychologist*, 24, 256-259.
- Lustberg, R. (2003). <http://www.psychologyofsports.com/guest/superstitions2.htm>
- MacDonald, W. L., 1995. The effects of religiosity and structural strain on reported paranormal experiences. *Journal for the Scientific Study of Religion*, 34, 366-376.
- Maduwesi, E. (1982). Nigerian elementary children's interests and concerns. *Alberta Journal of Educational Research*, 28, 204-211.
- Maier, S. P., & Seligman, M. E. P (1976). Learned helplessness: Theory and evidence. *Journal of Experimental of Psychology*, 105, 3-46.
- Malinowski, B. (1955). *Magic, science, and religion*. New York: Doubleday.
- Malinowski, B. (1927). *Sex and Repression in Savage Society*. London: Kegan Paul, Trench.
- Malinowski, B. (1948). *Magic, Science and Religion and Other Essays*. Glencoe, Illinois: The Free Press.
- Malinowski, B. (1954). *Magic, science and religion and other essays*. Garden City, NY: Doubleday.
- Malinowski, B., (1927). *Coral Gardens and Their Magic*. Routledge and Kegan, London.
- Malinowski, B., 1948. *Magic, Science and Religion*. Doubleday, Garden City.
- Maller, J. B.; Lundeen, G. E. (1934) Superstition and emotional maladjustment. *The Journal of Educational Research*, 27, 592-617.

Maller, J., and G. Lundeen. 1933. Sources of superstitious beliefs. *Journal of Educational Research* 26(5): 321-343.

Mandell, D. L., Claypool, M. L., & Kay, D. J. (2005). Superstitions among perioperative nurses. *AORN Journal*, 81, 971-984.

Maslow, A. H. (1968) *Toward a Psychology of Being*. (2<sup>nd</sup>Ed.) Princeton, NJ: Van Nostrand.

Martin, B. (1981). *A Sociology of Contemporary Cultural Change*, Oxford: Basil Blackwell.

Matute, H. (1994). Learned helplessness and superstitious behavior as opposite effects of uncontrollable reinforcement in humans. *Learning and Motivation*, 25, 216-232.

Matute, H. (1995). Human reactions to uncontrollable outcomes: Further evidence for superstitions rather than helplessness. *Quarterly Journal of Experimental Psychology*, 48, 142-157.

Matute, H. (1996). Illusion of control: Detecting response-outcome independence in analytic but not in naturalistic conditions. *Psychological Science*, 7, 289-293.

Maykut, P., & Morehouse, R. (1994). *Beginning qualitative research: A philosophic and practical guide*. London: Falmer Press.

McCauley, R. N., and E. T. Lawson, E. T. (2002). *Bringing Ritual to Mind: Psychological Foundations of Cultural Forms*. Cambridge: Cambridge University Press.

- McClenon, J. (1990). Chinese and American anomalous experiences: The role of religiosity. *Sociological Analysis*, 51, 53-67.
- McKellar, P. (1952). *A textbook of human psychology*, London: Cohen and West.
- Meijen, C., Jones, M. V., & Sheffield, D., (in press) Challenge and threat states in athletes: Are your head and heart telling you a different story?
- Mendes, W. B., Reis, H., Seery, M. D., & Blascovich, J. (2003). Cardiovascular correlates of emotional expression and suppression: Do content and gender context matter? *Journal of Personality and Social Psychology*, 84, 771-792.
- Miles, M. B., Huberman, A. M. (1994). *Qualitative Data Analysis: An expanded sourcebook* (2nd edn.), Sage: London & Thousand Oaks, California.
- Mowen J. C., Carlson B. (2003), Exploring the Antecedents and Consumer Behavior Consequences of the Trait of Superstition, *Psychology and Marketing*, 20(12), 1045-1065.
- Myers, D. G. (1995). *Psychology* (4th ed.) New York, NY: Worth Publishers.
- Neil, G. (1980). The place of superstition in sport: The self-fulfilling prophecy. *Coaching Review*, 3, 40-42.
- Neil, G. I. (1982). Demystifying sport superstition. *International Review of Sport Sociology*, 17, 99-124.
- Neil, G., Anderson, B., & Sheppard, W. (1981). Superstitions among male and female athletes at various levels of involvement. *Journal of Sport Behavior*, 4, 137-148.

- Nemeroff, C., & Rozin, P. (2000). The makings of the magical mind. In K. S. Rosengren, C. N. Johnson, & P. L. Harris (Eds.). *Imagining the impossible: magical, scientific, and religious thinking in children* (pp. 1–34). New York: Cambridge University Press.
- Newport, F., & Strausberg, M. (2001). Americans' belief in psychic and paranormal phenomena is up over last decade. *Gallup News Service. Poll Analyses*. URL:
- Nicholls, A. R., Holt, N.L., & Polman, R. C. J. (2005). A phenomenological analysis of coping of *Personality and Social Psychology*, 67, 48-55.
- Ofori, P. K., Lavalley, D. & Todd, D. (in press). An Interpretive Phenomenological Analysis of superstitious behaviours and religious rituals among Elite professional footballers during the FIFA 2010 World Cup in South Africa. *Psychological Reports*.
- Ofori, P. K., Biddle S., and Lavalley, D. (2012). The role of superstition among professional footballers in Ghana. *Athletic Insight*, 4(2), 115-126. Available at: <http://www.athleticinsight.com/Vol14Iss2/Feature.htm>
- Ofori, P.K. (2006). *The Role of Superstition in Professional Footballers in Ghana* (Master's Dissertation). Loughborough University.
- Ono, K. (1987). Superstitious behavior in humans. *Journal of the Experimental Analysis of Behavior*, 47 (3), 261-271.
- Opie I. & Opie P. (1959). *The Lore and Language of Schoolchildren*. Oxford University Press.
- Orenstein, A. (2002). Religion and Paranormal Belief. *Journal for the Scientific Study of Religion* basketball, 41(2), 301-311.



- Otis, L. P., & Alcock, J. E. (1982) Factors affecting extraordinary belief. *The Journal of Social Psychology, 118*, 77-85.
- Otis, L. P., & Kuo, E. C. Y. (1984). Extraordinary beliefs among students in Singapore and Canada. *Journal of Psychology, 116*, 215-226.
- Otto, H. J., & McDonald, D. (1951). Learning materials. *Review of Educational Research, 21*, 220-226.
- Padgett, V., & Jorgenson, D. O. (1982). Superstition and economic threat: Germany 1918-1940. *Personality and Social Psychology Bulletin, 8*, 736-741.
- Pargament, K.I. (1997). *The psychology of religion and coping: Theory, research, practice*. New York: Guilford.
- Park, J. (2000). Coping strategies by Korean national athletes. *The Sport Psychologist, 14*, 63-80.
- Park, R. L. (2000). *Voodoo Science: The Road from Foolishness to Fraud*. New York: Oxford University Press
- Pasachoff, J. M., Cohen, R. J., & Pasachoff, N. W. (1970). Belief in the supernatural among Harvard and West African university students. *Nature, 227*, 971-972.
- Patton, M. Q. (1987). *How to Use Qualitative Methods in Evaluation*. California: Sage Publications, Inc.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage Publications.
- Patton, M. Q. (2002) *Qualitative Research and Evaluation Methods*. (3<sup>rd</sup>ed.) Thousand Oaks, CA: Sage Publications

- Pearlin, L.I. and Schooler, C. (1978).The structure of coping. *Journal of Health and Social Behaviour*19: 2-21.
- Peltzer, K. (2003) Magical thinking and paranormal beliefs among secondary and university students in South Africa. *Personality and individual differences*. 35:1419-1426.
- Peng, Y., & Lachman, M. E. (1994).*Primary and secondary control: Cross-cultural and life-span developmental perspectives*. Paper presented at the 13th Biennial Meeting of Institutional Society for the Study of Behavioural Development, Amsterdam, The Netherlands.
- Pepitone, A., & Saffiotti, L. (1997).The selectivity of nonmaterial beliefs in interpreting life events. *European Journal of Social Psychology*, 27, 23–35.
- Perkins, S. L. (2000). *Paranormal beliefs: Developmental antecedents, perceived control and defensive coping*: Unpublished Ph.D. thesis, Conolly College, Long Island University.
- Peterson, C. (1978). Focus of control and belief in self-oriented superstitions. *The Journal of Social Psychology*, 105, 305-306.
- Picasso, P. (1966). *Quoted in Hélène Parmelin, "Truth," In Picasso Says*. London: Allen & Unwin (trans. 1969).
- Plug, C. (1976). The psychology of superstition: A review. *Psychologia Africana*, 16, 93-115.

- Prapavessis, H. and Carron, A.V. (1988) Learned helplessness in sport. *The Sport Psychologist*, 2, 189-201.
- Preece, P. F. W., & Baxter, J. H. (2000). Scepticism and gullibility: The superstitious and pseudo-scientific beliefs of secondary school. *International Journal of Science Education*, 22 (No 11), 1147-1156.
- Rappaport, R. A. (1999) *Ritual and Religion in the Making of Humanity*. Cambridge: Cambridge University Press
- Reid, K. S. (1978). *Rodeo rituals: A look at the superstitions of the rodeo*. Mid-South Sociological Association (MiSSA), 1978.
- Richards, P. S., & Bergin, A. E. (1997). *A spiritual strategy for counselling and psychotherapy*. Washington, DC: American Psychological Association.
- Richards, P. S., & Bergin, A. E. (1999). *Handbook of psychotherapy and religious diversity*. Washington, DC: American Psychological Association.
- Risen, J. L., & Gilovich, T. (2007). Another look at why people are reluctant to exchange lottery tickets. *Journal of Personality and Social Psychology*, 93, 12-22.
- Rosenthal, T., & Siegel, J. B. (1959). Magic and Witchcraft: An Interpretation from Dissonance Theory. *Southwestern Journal of Anthropology*.15, (2), 143-167.
- Rosenthal, D., & Frank, J. D. (1956). Psychotherapy and the placebo effect. *Psychological Bulletin*, 53, 294-302.
- Rosenthal, R. (1966). *Experimenter effects in behavioral research*. East Norwalk, CT, US: Appleton-Century-Crofts.

- Ross, C. E., & Mirowsky, J. (2002). Age and the gender gap in the sense of personal control. *Social Psychology Quarterly*, *65*, 125-145.
- Rothbaum, F., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social psychology*, *42*, 5-37.
- Rotter, J. B. (1954). *Social learning and clinical psychology*. New York: Prentice-Hall.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control for Reinforcement. *Psychological Monographs*, *80* (1, Whole No. 609).
- Rudski, J. (2004). The illusion of control, superstitious belief, and optimism. *Current Psychology*, *22*, 306-315.
- Rudski, J. M. (2001). Competition, superstition, and the illusion of control. *Current Psychology*, *20*, 68-84.
- Rudski, J. M. (2003). What does a “superstitious person” believe? Impressions of participants. *The Journal of General Psychology*, *130*, 431-445.
- Rudski, J. M. (2004). The illusion of control, superstitious belief, and optimism. *Current Psychology*, *22*, 306-315.
- Rudski, J. M., & Edwards, A. (2007). Malinowski goes to college: Factors influencing students’ use of ritual and superstition. *Journal of General Psychology*, *134*, 389-403.

- Rudski, J. M., Lischner, M. I. & Albert, L. M. (1999). Superstitious rule generation is affected by probability and type of outcome. *Psychological Record*, 49, 245-260.
- Russell, D., & Jones, W. H. (1980). When superstition fails: Reactions to disconfirmation of paranormal beliefs. *Personality and Social Psychology Bulletin*, 6, 83-88.
- Saenko, Y. V. (2004). Superstitions of modern students. *Voprosy Psichologii*, 4, 122-130.
- Salter, C. A., & Routledge, L. M. (1971). Supernatural beliefs among graduate students at the University of Pennsylvania. *Nature*, 232, 278-279.
- Sarason, I. G. (1984). Stress, anxiety, and cognitive interference: Reactions to tests. *Journal of Personality and Social Psychology*, 46, 929- 938.
- Scanlan, T. K., Stein, G. L., & Ravizza, K. (1991). An in-depth study of former elite figure skaters: III. Sources of stress. *Journal of Sport & Exercise Psychology*, 13, 102-120.
- Schamber, L. (1991). Users' Criteria for Evaluation in Multimedia Information Seeking and Use Situations. Ph.D. dissertation, Syracuse University.
- Schamber, L. (2000). Time-line interviews and inductive content analysis: Their effectiveness for exploring cognitive behaviors. *Journal of the American Society for Information Science*, 51(8), 734-744.
- Scheibe, K. E. (1970). *Beliefs and Values*; New York, Holt, Rinehart and Winston.
- Scheibe, K. E., & Sarbin, T. R. (1965). Towards a theoretical conceptualization of superstition. *British Journal for the Philosophy of Science*, 16, 143-158.

- Scheidt, R. J. (1973). Belief in supernatural phenomena and locus of control. *Psychological Reports, 32*, 1159-1162.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219- 247.
- Schindler, R., Conlin, S. O., & Kornberger, B. (2007). *Choice of low deductible levels among homeowners insurance customers: informational and emotional factors*. Working paper, Rutgers University–Camden, Camden NJ.
- Schindler, R. M., Dolansky, E., & Adams, G. C. (2009). *Talisman insurance: Does insurance coverage help you avoid tempting fate?* Working paper
- Schippers, M. C. & Van Lange, P. A. M (2006). The psychological benefits of superstitious rituals in top sport: A study among top sportspersons. *Journal of Applied Social Psychology, 36*, 2532-2553.
- Schoeman, F.R. (1969). Diatoms from the Orange Free State (South Africa) and Lesotho. *No. 2. Revista de Biologia, 7(1-2)*, 35-74.
- Seligman, M. E. P. (1975). *Helplessness: On Depression, Development, and Death*. San Francisco: W. H. Freeman
- Seligman, M. E. P., Meier, S. F., & Solomon, R. L. (1971). Unpredictable and uncontrollable aversive events. In R. F. Brush (Ed.), *Aversive conditioning and learning*. New York: Academic Press.

- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55 (1), 5-14.
- Sen, A. (1990). Gender and cooperative conflicts, in I. Tinker (Ed) *Persistent Inequalities: Women and World Development* (New York, Oxford University Press).
- Shaw, I.F. (1999). *Qualitative evaluation*. London: Sage.
- Silver, W. S., Mitchell, T. R., & Gist, M. E. (1995). Responses to successful and unsuccessful performance: The moderating effect of self-efficacy on the relationship between performance and attributions. *Organizational Behavior and Human Decision Processes*, 62 (3), 286-299.
- Skinner, B. F. (1948). "Superstition" in the pigeon. *Journal of Experimental Psychology*, 38, 168-172.
- Skinner, B. F. (1953). *Science and human behavior*. New York: Macmillan.
- Skinner, N., & Brewer, N. (2002). The dynamics of threat and challenge appraisals prior to a stressful achievement event. *Journal of Personality and Social Psychology*, 83, 678-692.
- Skinner, N., & Brewer, N. (2004). Adaptive approaches to competition: challenge and positive emotion. *Journal of Sport and Exercise Psychology*, 26, 283-305.
- Smith, J. A. (1995). Semi-structured interviewing and qualitative analysis. In J. A. Smith, R. Harre, & L. van Langenhove (Eds.), *Rethinking methods in psychology* (pp. 9-26). London: Sage.

- Smith, J. A. & Osborn, M. (2003) Interpretative phenomenological analysis. In J.A. Smith (Ed.), *Qualitative Psychology: A Practical Guide to Methods*. London: Sage.
- Snyder, E. C. & Spreitzer, E. (1978). *Social Aspects of Sport*. Englewood Cliffs, NJ: Prentice Hall Inc.
- Sobal, J., & Emmons, C. F. (1982). Patterns of belief in religious, psychic, and other paranormal phenomena. *Zetetic Scholar*, 9, 7-17.
- Sørensen, J. (2007b). Acts That Work: Cognitive Aspects of Ritual Agency. *Method and Theory in the Study of Religion* 19,281–300.
- Sparkes, A. (1998). Validity in qualitative inquiry and problems of criteria: Implications for sport psychology. *The Sport Psychologist*, 12, 363-386.
- Spector, P. E. (1986). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Human Relations*, 11, 1005-1016.
- Spielberger, C. D. (1983). *Manual for the State-Trait Anxiety Inventory (Form Y)*. Palo Alto, CA: Mind Garden.
- Stark, R., & Bainbridge, W.S. (1980). Networks of Faith: Interpersonal Bonds and Recruitment to Cults and Sects. *American Journal of Sociology* 85(6), 1376–1395.
- Stajkovic, A. D. & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, 124, 240-261.



- Stegman, R. L., & McCreynolds, W. T. (1978). "Learned Helplessness," "Learned Hopefulness," and "Learned Obsessiveness": Effects of varying contingencies on escape responding. *Psychological Reports, 43*, 795-801.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.
- Strean, W. B. (1998). Possibilities for qualitative research in sport psychology. *The Sport Psychologist, 12*, 333-345.
- Strean, W. B., & Roberts, G. C. (1992). Future directions in applied sport psychology research. *The Sport Psychologist, 12*, 333-345.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103*, 193-210.
- Terkeurst, A. J. (1939). Comparative differences between superstitious and non-superstitious children. *Journal of Experimental Education, 7*, 261-267.
- Thalbourne, M. A. (1985). Are believers in psi more prone to schizophrenia? [Summary]. In R. A. White & J. Solfvin (Eds.), *Research in Parapsychology 1984* (pp. 85-88). Metuchen, NJ: Scarecrow Press.
- Thomas, K. & Block, L. G. (2008), "Conscious and Non-conscious Components of Superstitious Beliefs in Judgment and Decision-Making," *Journal of Consumer research, 34* (6), 783-793.
- Thomas, S., Joseph, C., Laccetti, J., Mason, B., Mills, S., Perril, S., & Pullinger, K. (2007). Transliteracy: Crossing Divides. *First Monday: 12* (12).

- Thompson, S.C., Armstrong, W., & Thomas, C. (1998). Illusions of control, underestimations, and accuracy: A control heuristic explanation. *Psychological Bulletin*, *123*, 143–161.
- Tobacyk, J. (1988). *A revised paranormal belief scale*. Unpublished manuscript, Louisiana Tech University, Rushton, LA.
- Tobacyk, J. (2004). A revised paranormal belief scale. *The International Journal of Transpersonal Studies*, *23*, 94-99.
- Tobacyk, J. [J.] (1982). Paranormal belief and trait anxiety. *Psychological Reports*, *51*, 861-862.
- Tobacyk, J. [J.], & Milford, G. (1983). Belief in paranormal phenomena: Assessment instrument development and implications for personality functioning. *Journal of Personality and Social Psychology*, *44*, 1029-1037.
- Tobacyk, J. [J.], & Tobacyk, Z. S. (1992). Comparisons of belief-based personality constructs in Polish and American university students: Paranormal beliefs, locus of control, irrational beliefs, and social interests. *Journal of Cross-Cultural Psychology*, *23*(3), 311-325.
- Tobacyk, J. J., & Mitchell, T. E. (1987). Out-of-body experience status as a moderator effects of narcissism on paranormal beliefs. *Psychological Reports*, *60*, 440-442.
- Tobacyk, J. J., Nagot, E., & Miller, M. (1988). Paranormal beliefs and locus of control: A multidimensional examination. *Journal of Personality Assessment*, *52*, 241-246.

- Tobacyk, J., & Milford, G. (1983). Belief in paranormal phenomena: Assessment instrument development and implications for personality functioning. *Journal of Personality and Social Psychology, 44*, 1029-1037.
- Tobacyk, J., Mark, J., Miller, P. M., & Thomas M. (1988). "Comparisons of Paranormal Beliefs of Black and White University Students from the Southern United States." *Psychological Reports 63*(2):492-94.
- Todd, M., & Brown, C. (2003). Characteristics associated with superstitious behavior in track and field athletes: Are there NCAA divisional level differences? *Journal of Sport Behavior, 26*, 168-187.
- Torgler, B. (2007). Determinants of superstition. *The Journal of Socio-Economics, 36*, 713-733.
- Treasure, D. C., Monson, J., & Lox, C. L. (1996). Relationship between self-efficacy, wrestling performance, and affect prior to competition. *The Sport Psychologist, 10*, 73-83.
- Tsang, E. W. K., (2004). Toward a scientific inquiry into superstitious business decision-making. *Organization Studies, 25*, 923-946.
- Van Manen, M. (1997). *Researching lived experience: human science for an action sensitive pedagogy*. London, ON: The Althouse Press.
- Van Raalte, J L, Brewer, B. W., Nemeroff, C. J., & Linder, D. E. (1991). Chance orientation and superstitious behavior on the putting green. *Journal of Sport Behavior, 14*, 41-50.

- Van Yperen, N.W. (2006). A Novel Approach to Assessing Achievement Goals in the Context of the 2 x 2 Framework: Identifying Distinct Profiles of Individuals With Different Dominant Achievement Goals. *Personality and Social Psychology Bulletin*, 32, 1432-1445.
- Vandewiele, M. (1981). Fears of Senegalese secondary school students. *The Journal of Interdisciplinary and Applied Psychology*, 107, 281-287.
- Venturi, I. (1986). Superstition in sports. *Movimento*, 2, 23-27.
- Vernacchia, R.A., McGuire, R.T., Reardon, J.P., & Templin, D.P. (2000). Psychosocial characteristics of Olympic track and field athletes. *International Journal of Sport Psychology*, 31, 5-23.
- Vyse, S. A., (1997). *Believing in magic*. New York, NY: Oxford University Press.
- Whitson, J., Galinsky, A. D., Magee, J. C., Liljenquist, K. A., & Gruenfeld, D. H. (2008). *Power and overcoming obstacles: Implications for goal pursuit, disobedience, and bystander intervention*. Unpublished manuscript.
- Wierzbicki, M. (1985). Reasoning errors and belief in the paranormal. *Journal of Social Psychology*, 125, 489-494.
- Wilder, J. (1975). The lure of magical thinking. *American Journal of Psychotherapy*, 1, 37-55.
- Williams S. E., Cumming J., Balanos G. M. (2010). The use of imagery to manipulate challenge and threat appraisal States in athletes. *Journal of Sport and Exercise Psychology*, 32(3): 339-58.

- Williams, J. M. (1986). Psychological characteristics of peak performance. In J. M. Williams (Ed.), *Applied sport psychology: Personal growth to peak performance* (pp. 123-132). Palo Alto, CA: Mayfield.
- Wiseman, R. (2004). *The luck factor: The scientific study of the lucky mind*. London: Arrow.
- Wiseman, R., & Watt, C. (2004). Measuring superstitious belief: Why lucky charms matter. *Personality and Individual Differences, 37*, 1533-1541.
- Wolfradt, U. (1997). Dissociative experiences, trait anxiety and paranormal beliefs. *Personality and Individual Differences, 23*, 15-19.
- Womack, M. (1979). Why athletes need ritual: A study of magic among professional athletes. In W. J. Morgan (Ed.), *Sport and the humanities: A collection of original essays*. Knoxville, TN: The Bureau of Educational Research and Service, College of Education, The University of Tennessee.
- Womack, M. (1981). *Sports magic: Symbolic manipulation among professional athletes*. Unpublished doctoral dissertation, University of California, Los Angeles.
- Womack, M. (1992). Why athletes need ritual: a study of magic among professional athletes. In: Hoffman, S. (Ed.), *Sport and Religion*. Human Kinetics, Champaign, pp. 191-202.
- Woo, C.-K., Kwok, R. H. F., (1994). Vanity, superstition and auction price. *Economics Letters 44*, 389-395.

- Wright, J. C. (1962). Consistency and complexity of response sequences as a function of scheduled of noncontingent reward. *Journal of Experimental Psychology*, *63*, 601-609.
- Wright, P. & Erdal, K. (2008). Sport superstition as a function of skill level and task difficulty. *Journal of Sport Behavior*, *31*, 187-199
- Wrigley, L. R. (1970). Magic in Sports. *Seventh World Congress of Sociology, Varna, Bulgaria*
- Wrosch, C., & Heckhausen, J. (1999). Control processes before and after passing a developmental deadline: Activation and deactivation of intimate relationship goals. *Journal of Personality and Social Psychology*, *77*, 415–427.
- Wrosch, C., Heckhausen, J., & Lachman, M. E. (2000). Primary and secondary control strategies for managing health and financial stress across adulthood. *Psychology and Aging*, *15*, 387–399.
- Wuthnow, R. (1976). Astrology and marginality. *Journal for the Scientific Study of Religion*, *15*, 157-168.
- Yamane and M. Polzer, “Ways of Seeing Ecstasy in Modern Society,” *Sociology of Religion* *55*(1994): 1-25.
- Yardley, L. (2000). Dilemmas in qualitative health research. *Psychology and Health*, *15*, 215-228.
- Zapf, R. M. (1945). Relationship between belief in superstitions and other factors. *Journal of Educational Research*, *38*, 561-579.

- Zimmerman, B. J. (1995). Self-efficacy and educational development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 202-231). New York: Cambridge University Press.
- Zimmerman, B. J., & Bandura, A. (1994). Impact of self-regulatory influences on writing course attainment. *American Educational Research Journal*, 31, 845-862.
- Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment. *American Educational Research Journal*, 31, 845-862.
- Zusne, L., Jones, W. H. (1989). *Anomalistic psychology: A study of magical thinking* (2<sup>nd</sup> Ed) Erlbaum, Hillsdale, NJ.

## APPENDICES

### Studies 1 & 2

Informed consent

Questionnaires .....A1

Demographics

The Superstitious Ritual Questionnaire (SRQ; Bleak & Frederick, 1998)

Belief in Superstition Questionnaire (Wiseman & Watt, 2004)

Measurement Instrument for Primary and Secondary Control Strategies (MIDUS) (Peng & Lachman, 1994)

The Belief in Personal Control Scale (Berrenberg, 1987)

The short version of the Marlowe-Crowne Social Desirability Scale (MCSDS) by Marlowe and Crowne (1964)

The Brief COPE (Carver, 1997)



### Study 3

Informed consent.....B

Interview guide.....B

Probing questions .....B

Transcript for all the participants interviewed in the study.....B

### Study 4

Informed consent.....C

Interview guide.....C

Probing questions.....C

Transcript for all the participants interviewed in the study.....C

### Study 5

Informed consent.....D

Cover story .....D

Questionnaires .....D

**APPENDIX A: Studies 1& 2****Informed consent**

The above information is correct to the best of my belief and I understand it will be treated in the strictest confidence. The experimenter has fully explained the purpose of the experiment and the possible risks involved. I understand that I may withdraw from the experiment at any time and that I am under no obligation to give reasons for withdrawal. I will adhere to the instructions of the experimenter regarding safety before, during, and after the research. I hereby volunteer to participate in the research as a participant.

Name of participant .....

Signature of participant .....

Date .....

Name of experimenter.....

Signature of experimenter .....

Date .....

## Questionnaire

Please read every question separately and indicate the answer most applicable to you. The questionnaire is divided into six separate sections, and should take no longer than 30 minutes to complete. Please read the set of instructions for each section carefully before responding to the questions that follow as each section is different. Thank you very much for completing this questionnaire.

### Section 1

Instructions: Please answer each of the four questions below in the space provided.

1. What is your date of birth? \_\_\_\_\_
2. What is your gender? \_\_\_\_\_
3. What is your ethnicity? I. British ii. European iii. African iv. Afro-British v. Asian vi. Latino  
vii. Other Specify \_\_\_\_\_
4. What sports do you play? \_\_\_\_\_

### Section 2

Instructions: Listed below are a variety of rituals sports participants may use before or during competitions. For each ritual you use, place an “✓” in the space given. If you do use that ritual, also indicate how effective it is for you.

		Place a tick below if you engage in this ritual	If you use this ritual circle the the number indicating how effective you believe it is for you in helping your sports performance.				
			1	2	3	4	5
			Not at all			Very	
			effective			effective	
1. Check appearance in mirror	_____		1	2	3	4	5
2. Good luck markings on boots	_____		1	2	3	4	5
3. Dressing well to feel better prepared	_____		1	2	3	4	5
4. Wear warm-up top or bottom the same way	_____		1	2	3	4	5
5. Dressing sloppily-feel better prepared	_____		1	2	3	4	5
6. Wear socks inside out for luck	_____		1	2	3	4	5
7. Haircut on game day	_____		1	2	3	4	5
8. No shaving on game day	_____		1	2	3	4	5
9. Face painting (e.g. black under eyes)	_____		1	2	3	4	5
10. Get tattoo before season	_____		1	2	3	4	5
11. Wear a particular lucky number	_____		1	2	3	4	5
12. Eat same pre-game meal on game day	_____		1	2	3	4	5
13. Tape boots identically before game	_____		1	2	3	4	5
14. Wear same clothing under main kit	_____		1	2	3	4	5
15. When sub-in take jacket to player	_____		1	2	3	4	5
16. Carve number in flesh	_____		1	2	3	4	5
17. No socks under running spikes	_____		1	2	3	4	5
18. Have lucky item of clothing	_____		1	2	3	4	5

19. Team mascot help cause	_____	1	2	3	4	5
20. Wear lucky charm on game days	_____	1	2	3	4	5

Place a tick  
below if you  
engage in  
this ritual

If you use this ritual circle the  
the number indicating how effective  
you believe it is for you in helping  
your sports performance.

		1	2	3	4	5
		Not at all effective			Very effective	
21. Wear lucky charm so that it <u>can</u> be seen	_____	1	2	3	4	5
22. Wear lucky charm so that it <u>can't</u> be seen	_____	1	2	3	4	5
23. Discarding lucky charms	_____	1	2	3	4	5
24. Kiss/touch lucky charm before game	_____	1	2	3	4	5
25. Taping body-even if not injury	_____	1	2	3	4	5
26. Music during warm-up	_____	1	2	3	4	5
27. Snacks-energizers before contest	_____	1	2	3	4	5
28. Need silence/seclusion before game	_____	1	2	3	4	5
29. Same trainer does taping job	_____	1	2	3	4	5
30. Warm-up using same routine	_____	1	2	3	4	5
31. Slap hand or touch the scorer	_____	1	2	3	4	5
32. Gum chewing	_____	1	2	3	4	5
33. Specific goal celebration	_____	1	2	3	4	5
34. Perform a sign of the cross	_____	1	2	3	4	5
35. Shake net after failing to score	_____	1	2	3	4	5
36. Stacking hands	_____	1	2	3	4	5
37. Team cheer	_____	1	2	3	4	5
38. Unprepared if no pep talk	_____	1	2	3	4	5
39. Pep talk important for good performance	_____	1	2	3	4	5
40. Prayer for success before each game	_____	1	2	3	4	5
41. Afraid luck will run out if no prayer	_____	1	2	3	4	5
42. Team has team prayer	_____	1	2	3	4	5
43. Important for team to pray together	_____	1	2	3	4	5
44. Coach is superstitious	_____	1	2	3	4	5
45. Coach takes lucky charm to game	_____	1	2	3	4	5
46. Coach encourages prayer/mediation	_____	1	2	3	4	5

Instructions: Answer all questions and indicate the strength of your belief by picking a number from 1 (Definitely No) to 5 (Definitely Yes).

1. Have you avoided walking under a ladder because it is associated with bad luck?  
1. Definitely No      2. No      3. Maybe      4. Yes      5. Definitely Yes
2. Would you be anxious about breaking a mirror because it is thought to cause bad luck?  
1. Definitely No      2. No      3. Maybe      4. Yes      5. Definitely Yes
3. Are you superstitious about the number 13?  
1. Definitely No      2. No      3. Maybe      4. Yes      5. Definitely Yes
4. Do you ever say “fingers crossed” to yourself or actually cross your fingers?  
1. Definitely No      2. No      3. Maybe      4. Yes      5. Definitely Yes
5. Do you say “touch wood” to yourself or actually touch or knock on wood?  
1. Definitely No      2. No      3. Maybe      4. Yes      5. Definitely Yes
6. Do you sometimes carry a lucky charm or object?  
1. Definitely No      2. No      3. Maybe      4. Yes      5. Definitely Yes

#### Section 4

Instructions: Please read every item carefully and circle the most appropriate by picking a number from 1 (Not at all) to 4 (A lot).

1. When things don't go according to my plans, my motto is “Where there's a will, there's a way”.  
1. Not at all      2. Sometimes      3. Often      4. A lot
2. When faced with a bad situation, I do what I can do to change it for better.  
1. Not at all      2. Sometimes      3. Often      4. A lot
3. Even when I feel I have too much to do, I find a way to get it all done.  
1. Not at all      2. Sometimes      3. Often      4. A lot
4. When I encounter problems, I don't give up until I solve them.  
1. Not at all      2. Sometimes      3. Often      4. A lot
5. I rarely give up on something I am doing, even when things get tough.  
1. Not at all      2. Sometimes      3. Often      4. A lot
6. I find I usually learn something meaningful from a difficult situation.  
1. Not at all      2. Sometimes      3. Often      4. A lot
7. When I am faced with a bad situation, it helps to find a different way of looking at things.  
1. Not at all      2. Sometimes      3. Often      4. A lot
8. Even when everything seems to be going wrong, I can usually find a bright side to the situation.

1. Not at all          2. Sometimes          3.Often          4. A lot
9. I can find something positive, even in the worst situations.  
1. Not at all          2. Sometimes          3.Often          4. A lot
10. When my expectations are not being met, I lower my expectations.  
1. Not at all          2. Sometimes          3.Often          4. A lot
11. To avoid disappointments, I don't set my goals too high.  
1. Not at all          2. Sometimes          3.Often          4. A lot
12. I feel relieved when I let go of some of my responsibilities.  
1. Not at all          2. Sometimes          3.Often          4. A lot
13. I often remind myself that I can't do everything.  
1. Not at all          2. Sometimes          3.Often          4. A lot
14. When I can't get what I want, I assume my goals must be unrealistic.  
1. Not at all          2. Sometimes          3.Often          4. A lot

#### Section 5

Instructions: Please read every item carefully and circle the most appropriate by picking a number from 1 (Always true) to 5 (Never true).

1. I can make things happen easily.  
1. Always true    2. Often true    3.Sometimes true    4.Rarely true    5. Never true
2. Getting what you want is a matter of knowing the right people  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
3. My behavior is dictated by the demands of the society.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
4. If I just keep trying, I can overcome any obstacle.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
5. I can succeed with God's help.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
6. I find that luck plays a bigger role in my life than my ability.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
7. If nothing is happening, I go out and make it happen.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
8. I am solely responsible for the outcomes in my life.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
9. I rely on God to help me control my life.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true

10. Regardless of the obstacles, I refuse to quit trying.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
11. My success is a matter of luck.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
12. Getting what you want is a matter of being in the right place at the right time.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
13. I am able to control effectively the behavior of others.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
14. If I need help, I know that God is there for me.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
15. I feel that other people have more control over my life than I do.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
16. There is little that I can do to change my destiny.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
17. I feel that I can control my life as much as is humanly possible.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
18. God rewards me if I obey his laws.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
19. I am not the master of my own fate.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
20. I continue to strive for a goal long after others would have given up.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
21. Most things in my life I just can't control.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
22. God helps me to control my life.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
23. I have more control over my life than other people have over theirs.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
24. I actively strive to make things happen for myself.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
25. Other people hinder my ability to direct my life.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
26. What happens to me is a matter of good or bad fortune.

1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
27.    When something stands in my way, I go around it.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
28.    I can be whatever I want to be.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
29.    I know how to get what I want from others.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
30.    Fate can be blamed for my failures.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
31.    With God's help, I can be whatever I want to be.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
32.    I am the victim of circumstances beyond my control.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
33.    I can control my own thoughts.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
34.    There is nothing that happens to me that I don't control.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
35.    Whenever I run up against some obstacle, I strive even harder to overcome it and reach my goal.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
36.    By placing my life in God's hands, I can accomplish anything.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
37.    I am at the mercy of my physical impulses.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
38.    In this life, what happens to me is determined by my fate.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
39.    My actions are the result of God working through me.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
40.    I am the victim of social forces.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
41.    Controlling my life involves mind over matter.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true
42.    When I want something, I assert myself in order to get it.  
1. Always true    2. Often True    3.Sometimes true    4.Rarely true    5. Never true



43. The unconscious mind, over which I have no control, directs my life.  
1. Always true    2. Often True    3. Sometimes true    4. Rarely true    5. Never true
44. If I really want something, I pray to God to bring it to me.  
1. Always true    2. Often True    3. Sometimes true    4. Rarely true    5. Never true
45. I am not really in control of the outcomes in my life.  
1. Always true    2. Often True    3. Sometimes true    4. Rarely true    5. Never true

### Section 6

Instructions: The following items deal with ways you cope with stress in your life. There are many ways to try to deal with problems. Please read every item carefully and circle the most appropriate number under each statement. Although some items are similar, you should treat each separately.

1. I turn to work or other activities to take my mind off things.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
2. I concentrate my efforts on doing something about the situation I'm in.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
3. I say to myself "this isn't real."  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
4. I use alcohol or other drugs to make myself feel better.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
5. I get emotional support from others.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
6. I give up trying to deal with it.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
7. I take action to try to make the situation better.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
8. I refuse to believe that it has happened.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
9. I say things to let my unpleasant feelings escape.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
10. I get help and advice from other people.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
11. I use alcohol or other drugs to help me get through it.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
12. I try to see it in a different light, to make it seem more positive.  
1. I don't do this at all    2. I do this a little bit    3. I do this often    4. I do this a lot
13. I criticize myself.

1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
14. I try to come up with a strategy about what to do.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
15. I get comfort and understanding from someone.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
16. I give up the attempt to cope.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
17. I look for something good in what is happening.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
18. I make jokes about it.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
19. I do something to think about it less, such as going to movies, watching TV, reading,  
daydreaming, sleeping or shopping.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
20. I accept the reality of the fact that it has happened.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
21. I express my negative feelings.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
22. I try to find comfort in my religion or spiritual beliefs.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
23. I try to get advice or help from other people about what to do.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
24. I learn to live with it.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
25. I think hard about what steps to take.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
26. I blame myself for things that happened.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
27. I pray or meditate.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot
28. I make fun of the situation.  
1. I don't do this at all      2. I do this a little bit      3. I do this often      4. I do this a lot

## Section 7

Listed below are a number of statements concerning personal attitudes and traits. Please read each item and decide whether the statement is **true** or **false** as it pertains to you personally. For each statement, please **delete the response that does not apply to you**.

1. It is sometimes hard for me to go on with my work if I am not encouraged  
True/False
2. I sometimes feel resentful when I don't get my way  
True/False
3. On a few occasions, I have given up doing something because I thought too little of my ability  
True/False
4. There have been times when I felt like rebelling against people in authority even though I knew they were right True/False
5. No matter who I'm talking to, I'm always a good listener  
True/False
6. There have been occasions when I took advantage of someone  
True/False
7. I'm always willing to admit it when I make a mistake  
True/False
8. I sometimes try to get even rather than forgive and forget  
True/False
9. I am always courteous, even to people who are disagreeable  
True/False
10. I have never been irked when people expressed ideas very different from my own  
True/False
11. There have been times when I was quite jealous of the good fortunes of others  
True/False
12. I am sometimes irritated by people who ask favours of me  
True/False
13. I have never deliberately said something that hurt someone's feelings  
True/False

**Please check over your responses and return your completed questionnaire in the envelope provided. Thank you very much for your time and assistance.**

**APPENDIX B: Study 3**  
**Informed consent**

The above information is correct to the best of my belief and I understand it will be treated in the strictest confidence. The experimenter has fully explained the purpose of the experiment and the possible risks involved. I understand that I may withdraw from the experiment at any time and that I am under no obligation to give reasons for withdrawal. I will adhere to the instructions of the experimenter regarding safety before, during, and after the research. I hereby volunteer to participate in the research as a participant.

Name of participant .....

Signature of participant .....

Date .....

Name of experimenter.....

Signature of experimenter .....

Date .....

## Interview guide

### Demographics

Age

Gender            Male                      Female

Nationality

Marital status

Religious affiliation ..... Religious service  
.....

Status                      Professional                      Semi-professional

### Family Background

- Can you tell me a bit about yourself?
- Their religious background?
- How spiritual are you and your family?
- What are the common superstitions or rituals that are common in your community?

### Whole sport career

- When and how did you start your sport career?
- When did you decide to become a professional footballer?
- Can you describe some of your important/special memories as a footballer?

1. What does it take to win in sports?

- a) Focus
- b) Hard work
- c) Luck.                      Why?

2. Can you rate them on a scale of 10? 1 = Low and 10 = High.

3. Do you believe in superstitions? Yes or No

Can you explain your answer a bit?

4. Does superstition influence your performance?

How?

Why?

5. How do you respond to your opponents' ritualistic behaviors?

6. How do you prepare for big games?

- Practice
- Wear something with a lucky charm
- Pray
- Focus on the game
- Try not to think about it

7. To what extent will you attribute your success or failure to lucky/superstition?

Why?

How?

8. Under what conditions are you likely to engage in superstitious behaviour?

9. Do you have unexplainable fear before a match? Can you describe it?

10. Do you have any superstition? How does it help you?

11. How did you acquire your superstitious beliefs?

12. What will motivate you to engage in a ritual before, during and after a match?

Is it due to fear of failure or your desire to win at all cost? How?

Is it due to anything else? How?

#### Challenge or Threat Section

1. Do you see this injury as a threat to your career?
2. Do you fear this injury will have effects on your future national team call ups?
3. Do you see your inability to command a first team position as a fault of your coach?
4. Are you happy with what you have achieved so far in your career?
5. Does your inability to start games for your club affect you in any way?

6. Do you regret signing for this club?
7. Do you have any resentment about this national team call up?
8. How are you coping with de-selection?
9. Why do you think you don't often get selected to play?
10. How do you cope with injuries?
11. Do you have control over injuries in your career?
12. Did you discover any positives in all these situations you found yourself in?
13. How do you react to persistent bad calls from referees?
14. How do you control such bad calls from referees?
15. How confident do you think you are in overcoming this injury?
16. Do you at times worry about your injury?
17. Do you normally worry about upcoming competition?
18. How does this affect your performance in such games?
19. Do you think about the consequences of performing poorly?
20. Do you focus on the positive benefits you will obtain from your present situation?
21. Do you think about the consequences of performing well?

Closing question

- Anything you want to add?

Probing questions when the issue of spirituality comes up.

1. Do you believe in divinity or superhuman power?
2. What rituals do you practice?
3. How often do you pray?
4. Why do you pray?
5. Have you ever prayed before competition?
6. How do you reconcile your religious practices in your professional career?
7. What other religious observances are you involved in?
8. How do you reconcile your religion to that of your superstitious rituals before games?

9. How different are your religious beliefs from your superstitious beliefs?
10. What are the similarities?

General views about superstition/spirituality in sports

- Does it help?
- Is it good/bad and why?
- What are the benefits of using sports rituals?
- What do you think are the challenges/problems associated with superstitions and spirituality in sports?
- Should superstition/spirituality be encouraged in sports?
- Will you advise a teammate or a younger player to be superstitious or religious?
- What will you substitute in place of superstitious or religious rituals?



**APPENDIX C: Study 4**

## Informed Consent

**Informed consent**

The above information is correct to the best of my belief and I understand it will be treated in the strictest confidence. The experimenter has fully explained the purpose of the experiment and the possible risks involved. I understand that I may withdraw from the experiment at any time and that I am under no obligation to give reasons for withdrawal. I will adhere to the instructions of the experimenter regarding safety before, during, and after the research. I hereby volunteer to participate in the research as a participant.

Name of participant .....

Signature of participant .....

Date .....

Name of experimenter.....

Signature of experimenter .....

Date .....

## Interview guide

### Demographics

#### Age

Gender            Male                          Female

#### Nationality

#### Marital status

Religious affiliation ..... Religious service  
 .....

Status                          Professional                          Semi-professional

### Family Background

- Can you tell me a bit about your family?
- Their religious background?
- How spiritual are you and your family?
- What are the superstitions or rituals that are common in your family or culture?

### Whole sport career

- When and how did you start your sport career?
- When did you decide to become a professional footballer?
- Can you describe some of your important/special memories as a footballer?

4. What does it take to win in sports?

- a) Focus
- b) Hard work
- c) Luck.                          Why?

5. Can you rate them on a scale of 1 to 10?

6. Do you believe in superstitions? Yes or No  
 Can you explain your answer?

4. Does superstition influence your performance?

How?

Why?

5. How do you respond to your opponents' ritualistic behaviours?

6. How do you prepare for big games?

- Practice
- Wear something with a lucky charm
- Pray
- Focus on the game
- Try not to think about it

7. To what extent do you attribute your success or failure to lucky/superstition? Why? How?

8. Under what conditions are you likely to engage in superstitious behaviour?

9. Do you have unexplainable fear before a match? Can you describe it?

10. Do you have any superstition? How does it help you?

11. How did you acquire your superstitious beliefs?

12. What will motivate you to engage in a ritual before, during and after a match? Is it due to fear of failure or your desire to win at all cost? How?

13. What makes you think that a particular pre-game ritual will enhance your performance?

14. How do you feel when your teammate is involved in superstitious behaviour?

15. How do you reconcile your personal beliefs with that of superstition in general?

16. How do you feel when your personal superstition belief or religious beliefs are in contrast with that of the team?

17. Do you pray for success or good luck before games?

18. Do your dreams tell you what will happen in games?

19. Does obedience to authority figures contribute to your development of superstition?

20. Has compliance with an authority led you to sustained superstitious behaviour?

21. Did direct instruction in superstition by your parent led you to be superstitious?

22. Does your personal superstition learnt from your family contradict with your team's superstitious practices?

General views about superstition in sports

- Does it help?
- Is it good/bad and why?
- What are the benefits of using sports rituals?
- What do you think are the challenges/problems associated with superstitions in sports?
- Should superstition be encouraged in sports?
- Would you advise a teammate or a younger player to be superstitious?
- What will you substitute in place of superstitious rituals?

Closing question

- Anything you want to add?

**APPENDIX D: Study 5****Informed consent**

The above information is correct to the best of my belief and I understand it will be treated in the strictest confidence. The experimenter has fully explained the purpose of the experiment and the possible risks involved. I understand that I may withdraw from the experiment at any time and that I am under no obligation to give reasons for withdrawal. I will adhere to the instructions of the experimenter regarding safety before, during, and after the research. I hereby volunteer to participate in the research as a participant.

Name of participant .....

Signature of participant .....

Date .....

Name of experimenter.....

Signature of experimenter .....

Date .....

**COVER STORY**

Participants will be told that they are participating in a study designed to examine the relationship between a team's ability to adapt to motor performance tasks (penalty taking) and the ability to adapt to high-pressure situations in real life. They will be told that based on their ability to convert the penalties, they will be able to pass any future job interviews. The experimenter expects to find that participants with successful kicks on the penalty task will be more adaptable in high-pressure games and will be successful in life.

## Questionnaire

### Section 'A'

Instructions: Please answer each of the questions below in the space provided.

1. What is your date of birth? \_\_\_\_\_

2. What is your gender?      Male                       Female

3. What is your ethnicity?    I. British                       ii. European                       iii. African

iv. Afro-British                       v. Asian                       vi. Latino

vii. Other Specify \_\_\_\_\_

4. What position do you play? \_\_\_\_\_

**Please answer all the questions in reference to how you typically feel just before an important competition in your main sport.**

Below you will find a number of statements reflecting aspects of sport performance.

Please read each one carefully, relate the statement to how you feel *just before a stressful event when playing your sport*, and indicate to what extent you feel confident that you can:

	<b>Not at all</b>	<b>Somewhat</b>	<b>Moderately so</b>	<b>Quite a bit</b>	<b>Completely</b>
1. Stay calm despite the pressure	1	2	3	4	5
2. Stay focused on the most important parts of your performance	1	2	3	4	5
3. Mobilise all your resources for this performance	1	2	3	4	5
4. I need luck to perform well in difficulty situations	1	2	3	4	5
5. Raise the level of your performance if you have to	1	2	3	4	5
6. Stay motivated throughout your performance	1	2	3	4	5
7. Perform well even if things get tough	1	2	3	4	5



Below you will find three questions; please rate each question in terms of how you feel *just before a stressful event when playing your sport*.

	<b>Strongly Disagree</b>				<b>Strongly Agree</b>
Do you think it is entirely up to you whether you perform to the best of your abilities?	1	2	3	4	5
	<b>No control at all</b>				<b>Complete control</b>
How much control do you feel you have over whether you perform to the best of your abilities?	1	2	3	4	5
	<b>Extremely difficult</b>				<b>Not at all difficult</b>
How difficult will it be for you to perform to the best of your abilities?	1	2	3	4	5

Below you will find a number of statements reflecting aspects of sport performance.

Please read each one carefully and relate them to how you feel *just before a stressful event when playing your sport*. Indicate the extent to which each item is true of you. If you think the statement is very true of you, circle 7. If a statement is not at all true of you, circle 1. If the statement is more or less true of you, circle the number between 1 and 7 that best describes you.

	Not at all true							Very true
1. It is important to me to perform as well as I possibly can	1		2	3	4	5	6	7
2. I worry that I may not perform as well as I possibly can	1		2	3	4	5	6	7
3. It is important to me to do well compared to others	1		2	3	4	5	6	7
4. I just want to avoid performing worse than others	1		2	3	4	5	6	7
5. I want to perform as well as it is possible for me to perform	1		2	3	4	5	6	7
6. Sometimes I'm afraid that I may not perform as well as I'd like	1		2	3	4	5	6	7
7. It is important for me to perform better than others	1		2	3	4	5	6	7
8. My goal is to avoid performing worse than everyone else	1		2	3	4	5	6	7
9. It is important for me to master all aspects of my performance	1		2	3	4	5	6	7
10. I'm often concerned that I may not perform as well as I can perform	1		2	3	4	5	6	7
11. My goal is to do better than most other	1		2	3	4	5	6	7

performers

12. It is important for me to avoid being one of the worst performers in the group

1                      2                      3                      4                      5                      6                      7

**Debriefing questionnaire:**

1. How determined were you to win the performance task?

1. Definitely No                       2. No                       3. Maybe                       4. Yes                       5. Definitely Yes

2. Did you conform to the experimenter's instructions?

1. Definitely No                       2. No                       3. Maybe                       4. Yes                       5. Definitely Yes

3. How important was the performance task to you?

1. Definitely No                       2. No                       3. Maybe                       4. Yes                       5. Definitely Yes

4. How tense are you before the penalty taking task?

1. Definitely No                       2. No                       3. Maybe                       4. Yes                       5. Definitely Yes

5. What do you think was the aim of this study?.....