1   An Exploratory Investigation of Superstitious Behaviors, Coping, Control Strategies, and

2   Personal Control in Ghanaian and British Student-Athletes

Authors: Patrick Kwaku Ofori, David Tod & David Lavallee

3

1   Abstract

2   This study examined the relationships between primary and secondary control strategies,

3   coping,and superstitious behavior. Participants were 349 studentathletes from the United

4   Kingdom and Ghana, consisting of 194 males and 155 females. The nationality breakdown

5   was 177 British student athletes and 172 Ghanaian student athletes. Participants completed

6   five inventories measuring superstitious behaviors, personal control,control strategies, coping

7   skills, and social desirability. Sequential multiple regression analysis was used to determine

8   the relationship between these constructs.A 2 by 2 analysis of covariance was conducted to

9   assess the main and interactive effects of gender and nationality on superstitious behavior.

10   Findings demonstrated that personal control, coping mechanisms, and control strategies

11   predicted superstitious behavior. The findings suggest that athletes may engage

12   insuperstitious behavior as a coping mechanism and as a secondary control strategy to offer

13   them a sense of being in control in stressful situations. Theresults suggest that Ghanaian

14   student athletesmayengage in superstitious behaviormore than British student athletes.Results

15   are discussed in relation to previous research and practical implications are delineated.

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17   *Key Words*: student-athletes, personal control, coping mechanism, control strategies,

18   superstitious behavior

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2   Personal Control in Ghanaian and British Student-Athletes

3   The inherent competitiveness of athletes and the social pressure to succeed in sport

4   can influence an athlete to resort to external means, such as superstitious behavior, to try and

5   control the outcome of an athletic contest (Bleak & Frederick, 1998). Throughout history,

6   people have used rituals based on religion, magic, and/or superstition to cope with

7   uncertainties in their lives. Because sport competitions involve a high degree of uncertainty,

8   it is not surprising that many athletes engage in superstitious behaviours to make them feel as

9   if they have some control over what happens to them on the playing field (Czech, Wrisberg,

10   Fisher, Thompson, & Hayes, 2004). The feeling of control or stability can help calm an

11   athlete before a contest, allaying excitement and anxiety, while also increasing perceived

12   confidence (Becker, 1975).The implications of ritual meaning making are investigated as a

13   means to cope with sport specific sociocultural anxieties (Broch & Kristiansen, 2013). These

14   rituals may be interpretedaspsychosocialprocesses adopted in stressful sport environments.

15   Superstitious acts, or 'rituals' as they are better known, are used by athletes across

16   many different cultures (Womack, 1992). It is common among people in UK and Ghana to

17   engage in any of the following rituals, such as 'keeping their fingers crossed' (Vyse, 1997),

18   avoiding walking under ladders (Blum & Blum, 1974), knocking on wood (Goodall, 2012),

19   or making a sign of the cross (Ofori, Biddle, & Lavallee, 2012). Superstition is a function of

20   culture (Ofori et al., 2012), and the type of superstitions commonly practiced within a given

21   society may be reinforced by certain cultural rituals. Ghanaian athletes and teams, for

22   example, will often sprinkle animal blood, millet seeds,or other substances on the field of

23   play while such superstitious acts do not occur within British sports (Ofori, 2013). Culture is

24   viewed as a relatively organized system of shared meaning with subjective elements, such as

25   values, beliefs, attitudes, norms, roles, affects, cognitions, meanings, and mental processes

(Leung & van de Vijver, 2008). In this study, culture is considered in relation to the

environment in which the players have lived most of their lives, undertaken their schooling,

and engaged in sports, either in UK or in Ghana, since we agree with Calori and Sarnin (19

91) assertion that macro-cultural environment probably influence individuals behavior.

When examining coping, it is necessary to consider the particularities of the cultural

background (Wasti & Cortina, 2002). Recently, Anshel (2010) reviewed the literature

regarding culture and coping in sport. In the few cross-cultural studies that have focused on

the coping responses of athletes from different countries to the same acute stressor, cultural

differences were found in the use of coping strategies. In tennis, for example, a study with

Mexican and American players was conducted, where Puente Diaz and Anshel (2005) found

that culture was a significant predictor of the athletes' perceived controllability of the

stressors and their coping strategies.

In sport, there is emerging evidence to suggest that some athletes use

superstitiouspracticesboth as a coping mechanism to deal with stress and anxiety, and to

facilitate performance enhancement (Park, 2000). Superstitious practices also provide a

means for athletes to gain confidence and feelings of control in competitive situations

(Becker, 1975). Thus, superstitious behaviors function as a sort of "psychological placebo"

(Neil, 1980), reducing anxiety, building confidence, and helping athletes to enhance their

performance.

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). 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 & Siegel, 1959) create an

enabling environment for superstitions to thrive. For example, professional footballers who

1   played at the top level engaged in superstitious rituals to cope with the higher demands of the

2   competition (Ofori et al., 2012).

3   The ability to cope with stressful situations and to gain control in uncertain conditions

4   plays an important role in the athlete's career (Ofori, 2013). Coping is represented by

5   ''constantly changing cognitive and behavioral efforts to manage specific external and/or

6   internal demands that are appraised as taxing or exceeding to the resources of the person''

7   (Lazarus & Folkman, 1984, p. 141). Folkman (1984) considered control as a generalized

8   belief of an individual concerning the extent to which he or she can control outcomes of

9   importance and as a situational appraisal of the possibilities for control in a specific stressful

10   encounter. When control is viewed in relation to superstitious behaviorand coping, many of

11   the findings that have perplexed researchers become more understandable, and the pathways

12   through which control influences stress and adaptational outcomes become more

13   apparent.For example when an athlete feels in control, he/she demonstrates confidence to

14   handle career- and game-related stress and as such is able to cope better without engaging in

15   superstitious acts.The extent to which coping may be shaped by culture, superstitions, and

16   control strategies is unclear. The influence of these three conceptson coping has been well

17   documented individually, but less so in combination.

18   Researchers (e.g., Rothbaum, Weisz, & Snyder, 1982) contended that when attempts

19   are made to change outcomes instrumentally, the process of control is primary. Primary

20   control striving refers to an individual's attempts to change the external world so that it fits

21   with their personal needs and desires. Instances of primary control striving are evident in

22   persistence in goal striving or the investment of time and effort if obstacles emerge. However,

23   the process of control is secondary when attempts are made to gain a feeling of control when

24   actual control is perceived as unlikely or unattainable. A person may obtain this feeling of

25   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, downward comparison, or goal disengagement.

Specifically, under uncertain circumstances, individualsare likely to attempt primary control because they will prefer to draw on their personal skills and abilities (Heckhausen & Schulz, 1995). Then, if primary control is perceived as ineffective, they should resort to a compensatory secondary control strategy upon realisation that their physical efforts alone cannot bring the desired change (Heckhausen & Schulz, 1995). In this way, secondary control may function as a buffer against negative affect or helplessness under conditions of low primary control.Case, Fitness, Cairns, and Stevenson's (2004) findings revealed that superstitious strategies served as a backup when primary control decreased.

Locus of control (LOC) is the degree to which people report a sense of personal control. LOC has been dichotomized as internal or external (Rotter, 1966). A person with an internal LOC believes an event occurs as a product of his/her own behavior, whereas a person with an external LOC believes that an event is the product of chance, luck, or the influence of other people. In a related vein,'Internalizers' attempt to gain control by means of instrumentation. One essential attribute of 'Externalizers' is that they have diminished or non-existent primary control measures, hence they perceive reliance on superstition as a secondary control strategy. This observation was evident in Van Raalte, Brewer, Newmerof, and Linder's (1991) findings that psychology students believed the moretheir actions allowed them to take some control over chance events, the more likely they were to exhibit superstitious behavior in a golf putting task. An earlier study found a positive relationship between an external locus of control and belief in self-oriented superstitions (Peterson, 1978). Self-oriented superstition is a type of superstitious ritualthat individuals acquire through their

own actions that allows them to take some control over chance events. Such rituals and

corresponding beliefs may develop from an accidental contingency in personal

experience,but these rituals are not a product of culture (that is not transmitted culturally). In

contrast, Groth-Marnat and Pegden (1998) found in a study of undergraduate students than an

internal locus of control was related to stronger beliefs in superstitions. Tobacyk, Nagot, and

Miller (1988) found that greater personal efficacy control and greater interpersonal control

corresponded with less belief in superstition.

There is relative neglect of superstitious behaviors in the sport psychology literature

and there is a need to further document its importance in athletes' lives. Within the parent

discipline of psychology, however, superstitious behaviour has received significant attention

(e.g., Miller & Delaney, 2005; Sharkar, Hill, & Parker, 2014). Although there is a dearth of

literature in sport psychology, previous empirical research exploring superstitious behaviors

among athletes (e.g., Womack, 1992) indicates 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). 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, Monson,

& Lox, 1996).

For instance, 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

1   the high-risk tasks they face (Burger and Lynn, 2005). Psychologists have actively explored

2   the emergence of superstitious rituals among diverse populations facing uncontrollable

3   conditions, including: gamblers (Bersabe & Martınez Arias, 2000); consumers in the

4   marketplace (Block & Kramer, 2009; Kramer & Block, 2008); test-taking students (Rudski &

5   Edwards, 2007); targets of warfare (Keinan, 1994, 2002); puzzle solvers (Dudley, 1999);

6   golfers (Wright & Erdal, 2008; Damisch et al., 2010); footballers (Ofori et al., 2012);

7   baseball players (Burger & Lynn, 2005); track and field athletes (Todd & Brown, 2003); and

8   various other athletes (Bleak & Frederick, 1998; Schippers & Van Lange, 2006; Womack,

9   1992).

10   Further, Van Raalte, Brewer, Nemeroff, and Linder (1991) demonstrated that students

11   who believed that their own actions exert some control over chance events were most likely

12   to exhibit superstitions. Superstitions can promote one's sense of control in several ways:

13   first, it can help a person understand what is happening in his or her environment, because it

14   provides explanations and reasons for phenomena that are otherwise inexplicable or

15   unfamiliar. This perception makes the person's world more understandable, predictable, and

16   controllable. Second, by means of superstitious behaviors, the individual may generate

17   solutions that increase his or her control over the source of threat.Researchers (Burger &

18   Lynn, 2005; Damisch et al., 2010; Ofori et al., 2012; Schippers & Van Lange, 2006) have

19   highlighted the importance of superstition in the lives of athletes. A number of applied sport

20   psychologists have also emphasized the importance of using superstitions within pre-

21   performance routines.Despitethe perceived benefits, the existing literature has failed to

22   examine how student-athletes engage in superstitious behavior to gain control in sporting

23   performance contexts.

24   Research in the field has been equivocal regarding control with superstitious

25   behaviors among student athletes (Todd & Brown, 2003; Burke et al., 2006) but no study has

1 examined student athletes control strategies (primary and secondary) and coping mechanism

2 in a single academic study; thus, this investigation hopes to further clarify these relationships.

3 This study sets out to fill the gap in empirical evidence by exploring the possible

4 relationships among primary and secondary control, and coping with superstitious behaviors.

5   Gender variation is evident in the usage of superstition, with women tending to show

6 higher levels of superstitious beliefs than men (Vyse, 1997). Females and males have been

7 found to differ on the activation of "appearance" rituals (rituals associated with clothing like

8 jersey numbers, armbands and eye shadows), with females engaging in appearance rituals

9 more than males (Burhmann et al., 1982). Wiseman and Watt (2004) also found a highly

10 significant main effect with gender, with women tending to endorse both negative and

11 positive superstitions to a greater extent than men. However, Burke et al., (2006) found no

12 significant differences in overall usage of superstitious rituals between male and female

13 athletes. It is evident from these studies that research on gender variations in superstition

14 research has been inconsistent.

15   Sociological and psychological evidence documents that superstition still enjoys

16 surprisingly high levels of popularity in modern Asian, Africa, and Western societies, and it

17 influences attitudes and decisions in many spheres of daily life (Burger & Lynn, 2005).

18 Previous publications on the subject focused on athletes from Western countries only; hence,

19 the present study may be useful in exploring the phenomenon from different social contexts.

20   The purpose of this study is to examine the relationships between primary and

21 secondary control strategies, coping and superstitious behavior. Specifically, this study seeks

22 to explore differences between British and Ghanaian student-athletes on their experiences in

23 superstition usage, and how they are related to their control and coping strategies.A

24 secondary purpose of this study is to explore any gender differences that exist in the usage of

25 superstitious behavior among Ghanaian and UK student-athletes

Method

Participants

The participants were 349 student athletes from the United Kingdom and Ghana, consisting of 194 males and 155 females. The nationality breakdown was 177 British students and 197 Ghanaian students. In terms of ethnicity, the British student-athletes were Caucasian British without any Caribbean or African ancestry. See Table 1 for the age range, mean age, and the number in each group sampled.

Procedure

Data collection took place in Ghana and the United Kingdom, with permission granted and in compliance with a University Ethics Committee. The study was piloted to establish the time needed to complete the survey and to screen the questions. The purpose of this study, along with the risks, safeguards, and benefits, was explained to participants in this investigation before they were given the set of surveys. After the explanation, all participants were asked to read and sign the informed consent form. Administered by the first author, each group of student athletes completed the inventories during their training session. No coaches or technical support staff were present during the administration of the questionnaires. The data collection procedures in the UK were consistent with data collection processes in Ghana as this was to ensure consistency in the research procedure. The inventories were administered in the following order: one-page demographic questionnaire, the *Superstitious Ritual Questionnaire* (SRQ), the *Measurement Instrument for Primary and Secondary Control Strategies* (MIDUS), the *Belief in Personal Control Scale* and the short version of the *Marlowe-Crowne Social Desirability Scale* (MCSDS). To ensure confidentiality, the completed 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 type of sports. 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 behavior and rituals. This scale was selected because it consisted of items that were culturally relevant to the populations that were sampled in this study. The questionnaire consisted of 46 itemsseparated into seven categories of superstitious behavior, including clothing and appearance (rituals that are clothing-related; e.g., jersey number, lucky socks), fetishes (these are centred on fetishism; e.g., 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 behaviors 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 behavior (Bleak & Frederick, 1998). The SRQ was developed based upon the work of Buhrmann and Zaugg (1981); however, the psychometric properties have not been established but the questionnaire been used previously in published research by Burke et al.(2006) and Ofori et al. (2012).

1   The *Belief in Personal Control Scale* (Berrenberg, 1987) was utilised to measure

2   personal control. This instrument uses a five point Likert scale anchored on (1= Always true

3   to 5= Never true). The BPCS is a 45-item instrument used to measure three dimensions of

4   perceptions of personal control: general external control (ExtC), exaggerated internal control

5   dimensions (ExagC) and God-mediated dimension (GM). ExtC assesses the extent to which

6   an individual believes his or her outcomes are self-produced (internally) or produced by fate

7   or others (externally), for instance ("I can make things happen easily").ExagC dimension

8   measures an extreme and unrealistic belief in personal control, for instance ("Getting what

9   you want is a matter of knowing the right people").The God-mediated dimension measures

10   the belief that God can be solicited in the attainment of outcomes, for instance ("I can

11   succeed with God's help"). This dimension allows for the important distinction to be made

12   between individuals who believe that they have little or no control over their outcomes

13   (externals) versus those who believe they control outcomes indirectly through God. A higher

14   score of ExtC means more perceptions of internal control, higher scores of ExagC suggest

15   exaggerated belief in personal control and higher GM scores indicate less belief in God as a

16   mediator of control. The reliability of each of the three factors was established using

17   Cronbach's alpha as a measure of internal consistency. The test has a reliability of .85 (F1 –

18   internal), .88 (F2 – exaggerated), and .97 (F3 – mediator). The BPCS has been found to have

19   excellent construct validity with a range of .85 - .95 (Berrenberg, 1987).

20   Control strategies (Peng & Lachman, 1994)were measured with a 14-item

21   Measurement Instrument for Primary and Secondary Control Strategies (MIDUS) using a

22   four-point Likert scale (1 = not at all, 4 = a lot). Example items include: "I often remind

23   myself that I can't do everything" and "I can find something positive, even in the worst

24   situations."The participants indicated how well the items described them. Wrosch,

25   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 a = .77; eigenvalue = 1.14),

"positive reappraisals (secondary control)" (Cronbach's a = .78; eigenvalue = 4.13), and

"lowering aspirations (secondary control)" (Cronbach's a = .63; eigenvalue =2.04). They

provided evidence for the validity of the three scales when they performed zero-order

correlations with generalised control beliefs (mastery; e.g., Lachman & Weaver, 1998;

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< .0l). Peng and

Lachman's (1994) control strategy scale was utilised to measure types of control, with the

above stated psychometric properties.

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. It has questions

such as ("I sometimes feel resentful when I don't get my way", "No matter who I'm talking

to, I'm always a good listener" I'm always willing to admit it when I make a mistake"). The

items are dichotomously scored. For each answer the respondent provides that matches the

response given above, 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),

behavioral disengagement (2), venting (2), positive reframing (2), planning (2), humour (2),

1 acceptance (2), religion (2) and self-blame (2). The questionnaire consisted of items (e.g., "I

2 express my negative feelings. ", " I try to find comfort in my religion or spiritual beliefs.", " I

3 pray or meditate.").Participants were asked to indicate the degree to which they endorse items

4 using four response options (anchored with 1 "I don't do this at all", 2 "I do this a little bit", 3

5 "I do this often", and 4 "I do this a lot").

6   **Data Analysis**

7   After removing data from incomplete questionnaires, we evaluated the assumptions

8 underlying parametric tests using SPSS. Descriptive statistics and bivariate correlations were

9 calculated. Hierarchical multiple regressions were used for the main analysis.Demographic

10 variables were controlled to establish a distinct contribution of control and coping variables at

11 step 1, step 2 and step 3, respectively, in the analysis. Personal control variables were entered

12 first because of the greater theoretical importance of control in superstition research (Fluke,

13 Webster, & Saucier, 2014).Control strategies (primary and secondary) were entered second.

14 Coping mechanism constructs were entered at the third stage. Perceptions of control are the

15 most used concept in explaining superstitious behavior (Buhrmannand & Zaugg, 1981). For

16 instance, personal control variables presumed to be associated with superstitions were given

17 higher priority of entry because their constructs include the main correlates of superstition

18 and locus of control. In addition, several researchers have found a link between holding

19 superstitions and a need to cope with life's uncontrollability (Edis, 2000; Hughes, 2002;

20 Irwin, 1994).

21   Results of evaluation of assumptions led to transformation of the variables to reduce

22 skewness, reduce the number of outliers, and improve the normality, linearity and

23 homoscedasticity of residuals. With the use of a $p < .001$ criterion for Mahalanobis distance,

24 no outliers were found.

1   A 2 by 2 analysis of covariance was conducted to assess the main and interactive

2   effects of genderand nationality on superstitious behavior. Age was entered as a covariate to

3   control for individual difference in all the ANCOVA run. A follow-up one-way ANCOVA

4   was run to establish if there was any significant effect on any of the interactions.

5   **Results**

6   Pearson correlation coefficients were obtained among measures of personal control,

7   control strategies, coping, and superstitious behavior. As outlined in Table 2 significant

8   positive correlations ($p<.01$) existed between superstitious behavior and denial (.297),

9   behavior disengagement (.296), venting (.211) and religion (.335), while significant negative

10   relationships existed between superstitious behavior and humour (-.122), self-blame (-.155),

11   God-mediated control (-.375) and exaggerated internal control (-.264).

12   Sequential regression was employed to determine if the addition of information

13   regarding personal control measures (exaggerated internal control, God-mediated control)

14   and then coping mechanism measures (behavior disengagement, venting, self-blame, humour

15   and denial) improved the prediction of superstitious behavior after controlling for the

16   influence of social desirability, age, gender , and ethnicity. To avoid multi-collinearity,

17   religion was not included in the regression analysis since it measured the same psychological

18   attribute as God-mediated control ($r = -.87$). There was no problem with multi-collinearity

19   because the predictor variables had variance inflation factor (VIF) values that were less than

20   10 as asserted by Myers (1990). Menard (1995) suggested that tolerance statistic values

21   should not be below .2; in the present data's collinearity statistics for the predictor variables

22   were all above .2.

23   The results of the sequential regression analyses predicting superstitious behavior are

24   shown in Table 4. Age, social desirability, gender, and ethnicity were entered at Step 1,

25   explaining 19% of the variance in superstitious behavior. After entry of the exaggerated

1   internal control and God-mediated control at Step 2, the model explained 24% of the

2   variance, F (6,326) = 17.47, $p<.001$. The two control measures explained an additional 5% of

3   the variance in superstitious behavior, after controlling for age, gender, and socially desirable

4   responding (R square change = .05, F change [2,326] = 10.66, $p<.001$). Entry of the coping

5   mechanism measures at Step 3 explained 30% of the variance$(F[11,321] = 12.43, p<.001)$.

6   The four control measures and personal control measures explained an additional 6% of the

7   variance in superstitious behavior, after controlling for age, gender, and socially desirable

8   responding and adding personal control (R square change = .06, F change [5,321] = 5.07,

9    $p<.001$). In the final model, five control measures were statistically significant, with

10   nationality recording a higher beta value (beta = .2, $p<.05$) than venting (beta = .11, $p<.05$).

11   The results of the regression analyses predicting superstitious behavior are shown in

12   Table 4. As may be seen, personal control and coping mechanism were significant predictors

13   of superstitious behavior. It is reported here the effects of exaggerated internal control,

14   behavior disengagement, venting, and self-blame on superstitious behavior within personal

15   control, and coping mechanisms were significant predictors. Inspection of Table 4 reveals

16   that when God- Mediated Control and Exaggerated internal control are controlled, venting

17   was significant positive predictor of superstitious behavior, ($\beta=.11$, $p<.05$), behavior

18   disengagement was significant positive predictor of superstitious behavior, ($\beta=.17$, $p<.01$)

19   and self-blame was significant negative predictor of superstitious behavior, ($\beta=-.18$, $p<.01$).

20   Statistical comparisons using tests of related betas (Cohen & Cohen, 1983) confirmed that

21   self-blame from coping mechanism made the highest significant contribution, while

22   exaggerated internal control was the only personal control measure that made a significant

23   contribution to the superstitious behavior. Thus, those perceived to have adopted exaggerated

24   internal control as means of control are more likely to engage in superstitious behavior than

25   those who adopt God-mediated control and General external control. In the same vein, those

1   who adopted any of these coping mechanisms; behavior disengagement, venting, and self-

2   blame, are more likely to engage in superstitious behavior.

3   There was a significant main effect for nationality on superstitious behavior. The

4   mean scores for superstitious behavior are presented in Table 5.A 2 by 2 analysis of

5   covariance was conducted to assess the main and interactive effects of gender and nationality

6   on superstitious behavior. Age was entered as a covariate to control for individual difference.

7   Preliminary checks were conducted to ensure that there was no violation of the

8   assumptions of normality, linearity or homogeneity of regression slope. After controlling for

9   age, a statistically non-significant main effect was observed for gender: F (1, 356) =1.97,

10 p=.16, ηp^2 =0.01); however, the main effect was statistically significant for nationality: F

11 (1,356) =62.2, p<.05, ηp^2 =0.15. These results suggest that males and females do not differ in

12 their engagement with superstitious behavior. However, the present results suggest Ghanaian

13 student athletes (M=59.44, SD=47.93) are more likely to engage in superstitious behavior

14 than British student athletes (M=24.95, SD=19.70). There was no significant interaction

15 effect for gender and nationality: F (1,356) =1.77, p=.19, ηp^2 = 0.01).

16   **Discussion**

17   Superstition becomes a psycho-social resource that can inform athletes' perceptions of

18 their coping and control strategies, especially when they have been socialized within a

19 superstitious-infested society like Ghana (Ofori, 2013).The present study sought to draw

20 upon an established theory of control to investigate the relationships between personal

21 control, control strategies,superstitious behavior, gender, and nationality differences. There

22 were significant relationships between some of the measures of personal control, control

23 strategies, coping mechanisms, and superstitious behavior. Personal control and coping

24 mechanisms were significant predictors of superstitious behavior. Ghanaian student athletes

25 engaged in greater levels of superstitious behavior than British student athletes.

1   Superstition may provide some very useful coping behaviors if they are a devoted part

2   of the athlete's worldview (Ofori, 2013), and as such, athletes are capable of drawing strength

3   from the relevant superstitious practices. It can be argued that users/believers have an

4   additional control strategy and a unique coping style (Callaghan & Irwin, 2003). They do

5   have an extra cultural resource to use. The Ghanaian student-athletes' perceived belief in

6   superstition may be interlinked with their socialization processes – a worldview that further

7   enhanced when superstitious rituals are practiced openly and are well accepted. Effective

8   coping is therefore linked to characteristics of the athletes' worldview, previous experiences,

9   and psycho-social coping resources. In all these the bottom line is if the athlete feels that

10   these superstitious practices are serving as a constructive coping and control strategies, then

11   practitioners may want to discuss the importance of them with athletes.

12   The present study supportsthe findings of Burke et al. (2006) that there are no

13   significant differences in overall usage of superstitious rituals between male and female

14   athletes. The findings are inconsistent with those of Wiseman and Watt (2004), who found a

15   highly significant main effect with gender (with women tending to endorse both negative and

16   positive superstition to a greater extent than men) and Buhrmann and Zaugg (1981) who

17   found that that female athletes are more likely to use rituals than male athletes. A possible

18   explanation for this may be differences in the type of sports and the level of the participants

19   that were used in these various studies. There is also the issue of sport and teams sub-culture

20   that are unique and specific to a particular sports and team. Researchers could examine how

21   superstitious beliefs and behaviors vary across sports and teams. Such research might shed

22   light on the social and cultural processes influencing superstitious beliefs and behaviors in

23   sporting contexts (e.g., learning by observation from teammates and engaging in team

24   norms). Understanding such processes might allow practitioners to help athletes derive

25   performance and others benefits.

1 The present study finding does not support Matute's (1994) assertion that helplessness

2 undermines the individual's sense of control, which may lead to maladaptive or superstitious

3 behavior. This finding suggests that the maladaptive nature of superstitions, which has often

4 been suggested (Alcock, 1981; Dag, 1999), may not necessarily be the reality in all spheres of

5 life or the universal truth, especially to student-athletes who constituted the present

6 population. Rather, some researchers have begun to re-evaluate the functions of superstitious

7 behavior, and argue that superstitions may just as well be adaptive (Keinan, 2002; Neil, 1982;

8 Rudski & Edwards, 2007; Vyse, 1997; Wiseman, 2004). This perspective seems plausible if

9 one examines the groups of people who are traditionally superstitious (Vyse, 1997), which

10 includes students and athletes.

11 The present study confirms Burke et al.'s (2006) findings that athletes who believed

12 less in God-mediated control utilised fewer superstitious practices. They explained their

13 findings by suggesting that a lesser indicated belief in God-mediated control also indicated

14 fewer prayer-related rituals. Logically, prayer should not influence a lesser indicated belief in

15 God-mediated control, since prayer serves a positive function of either preventing a

16 misfortune or bringing good luck. However, the present study also confirms Burhmann and

17 Zaugg's (1983) findings that superstitious practices were directly correlated with church

18 attendance. Significant positive relation was established between religion and superstitious

19 behavior. This could be explained by the measuring scale of superstitious behavior that

20 classifies some religious rites, like prayer, as superstitions. This supports the call for clearer

21 distinction between what constitute religious rituals and superstitious rituals.

22 Religion may be defined as a "formal set of beliefs used to explain the unknown to

23 man, used to comfort him in time of stress, used to keep his ethics in focus, held together by a

24 mythology" (Coffin, 1971, p.40). Superstition is a belief that is outside the framework of

25 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 on lookers (Ofori, 2013).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.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.However, the basic similarities among these constructs

are ritual involvement and cultural relativeness. Religion and superstition are particularly

important in offering purpose and meaning to athletes' activities and life (Vyse, 1997).

       The present finding contradicts Groth-Marnat and Pegden's (1998) findings in a

sample 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 observation is an indication that student-athletes who have exaggerated

belief about their abilities are less likely to endorse superstitious practices, possibly because

their perception of control is not under threat.

       In addition, the present study lend support to Gmelch's (2004) assertion that

superstitious behaviors are comforting and bring order into athletes' world of little control. A

team or an athlete may engage in any practices from clothing and appearance to sign making

if they consider them important or linked to good performance. Irrespective of the nature of

these activities, what is important to the athlete is how useful the said ritual is to him/her in

feeling in control of a potential stressful situation. These rituals are most likely to be deemed irrational in the eyes of the observing outsider.

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 alignment 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.

These findings have applied implications for sport scientists on supporting student-athletes to develop their coping strategies. Athletes normally bring their worldview to the coping process (Ofori, 2013), as their social context has a bearing on demand appraisal. Practitioners and researchers have traditionally neglected to examine superstitious behaviors to improve athletes' coping skills.The applied implication is that practitioners may take into consideration the superstitious nature of an athlete before designing a coping strategy for him or her.It is essential for the practitioner to respect each of the athlete's beliefs systems and how that can be coined to fit into the greater team ethos.When dealing with superstitious athletes, another important consideration for the sport psychology consultant is the question of professional boundaries.If an athlete presents with serious difficulties in their superstitious teamor personal life, consultants should respect the athlete beliefs and the team ethos. Subsequent to this, sport psychology consultants need to be aware that superstition is a sensitive issue and that on many occasions it is most appropriate to allow the athlete to raise the issue.

On a theoretical level, these results have important implications for those wishing to understand why people turn to superstitious behaviors when their primary control strategies elude them. 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 behavior (Wiseman, & Watt, 2004). The significant correlations found in the present study underline the importance of expanding this theoretical understanding to take account of superstitious behavior and how they can fit in the athlete's coping repertoire. The required expansion should incorporate beneficial psychological functions of superstitions rather than associating superstitious behaviors 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 engaging in superstitious practices are conceptually similar to those that believe in religious rituals.

Unfortunately, researchers have not been able to assess specific religious rituals and the degree to which they will elicit superstitious behaviors, 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 as Ghana is considered as a religious country than UK, which is a secular country (Ofori, 2013). 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. It can be argued that superstitions have an influential effect on the demand and appraisal resources available to the individual. So in countries where there are not many qualified sport psychologists, and athletes and sporting clubs are not used to psychological support from qualified personnel, it is not surprising that athletes may engage in superstitious behaviours to

gain some sense of control and to cope with stress, since such practices could form part of the few available resources within their remit.

Future researchers should investigate how useful superstitious and religious practices could be within sport psychological consulting and if there is a need to integrate athletes' religious and superstitious practices in their psychological training or interventions. The need for further attention and research in this area should be made all the more evident as individuals continue to witness superstitious and religiously ritualistic behaviors performed by athletes in their respective sports. There is also the need for future researchers investigate cross-cultural interactions among the types of superstitious beliefs (positive and negative), to ascertain if differences exist in terms of belief patterns.

A limitation of the present study is the failure to clearly distinguish religious practices from superstitions.An additional limitation was not measuring superstitious behaviors that constitute bad omens. Future studies should investigate the differences between the types of superstitious beliefs and behavior and how they can be incorporate in the sport science support intervention programme for elite athletes.

Another limitation of the study is the scales used in measuring superstitious rituals and beliefs have limited psychometric evidence. The most likely result is the attenuation of relationships. The actual relationships may be stronger than those observed in the current study. Moreover, the Cronbach's Alpha Coefficients for General external control and Exagginternal control were low and this might have again attenuated observed relationships.The issue of social desirability, and problems associated with self-report might have influence the outcome of the present study. The social desirability effect, in which a participant offers information that they think is compatible with the researcher'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 rituals. The

1   notion among student-athletes that superstition is a shameful act, and also the myth that

2   superstition, when revealed, loses its effectiveness might have skewed the findings of this

3   study.

4   In conclusion, the results suggest that people may enact their superstitious practices as

5   coping mechanisms and as a secondary control strategy to create feelings of control under

6   conditions of impending failure. In relation with the theory of control strategies, superstitious

7   individuals could influence their demand and resources appraisal, which may influence their

8   choice of secondary control strategy. Evidence herein suggests that superstition offers some

9   benefits to its users. The degree of the benefits of superstitious behavior to the users could be

10   a function of his/her psycho-social orientation. This evidence provides important information

11   for coaches and sport psychologists to take into consideration when designing interventions.

12   Superstitious behaviors make the world more understandable, predictable and controllable

13   (Keinan, 2002). Through superstitious rituals, the individual may increase his or her control

14   over stressful situation.

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1 Table 1

2 *Gender and Age Statistics*

Ethnicity	Mean Age	Age Range	N
British Students	21.18	19-45	177
Ghanaian Students	24.11	19-45	172
British Females	21.20	19-32	71
British Males	21.16	19-45	106
Ghanaian Females	23.00	19-40	84
Ghanaian Males	25.11	19-51	88

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1   Table 2

2   *Summary of correlations between measures of belief in personal control, coping and*
3   *superstitious behavior*

Independent Variables	Superstitious Behavior
Self-distraction	-.054
Active coping	.042
Denial	.297**
Substance use	.034
Emotional support	-.007
Instrumental support	.056
Behavioral disengagement	.296**
Venting	.211**
Positive reframing	.081
Planning	.041
Humour	-.122*
Acceptance	.068
Religion	.335**
Self-blame	-.155**
General external control	-.058
God-mediated control	-.375**
Exaggeratedinternal control	-.264**
Primary Control	-.014
Secondary control 1	.067
Secondary control 2	.091

4   *** Correlation is significant at .01 level*

5   **Correlation is significant at .05 level*

6

1   Table 3

2   *Summary of means and standard deviation for predictor and criterion variables*

	Mean	Standard Deviation	Cronbach's Alpha
Social desirability (MCSDS)	6.63	2.55	.56
Self-distraction (COPE)	5.41	1.31	.62
Active coping (COPE)	5.81	1.18	.62
Denial (COPE)	3.69	1.34	.62
Substance use (COPE)	2.8	1.3	.67
Emotional support (COPE)	4.84	1.39	.60
Instrumental support (COPE)	5.23	1.44	.60
Behavioral disengagement (COPE)	3.29	1.2	.65
Venting (COPE)	4.76	1.25	.62
Positive reframing (COPE)	4.76	1.25	.60
Planning (COPE)	5.69	1.26	.61
Humour (COPE)	4.87	1.62	.64
Acceptance (COPE)	5.28	1.21	.61
Religion (COPE)	4.49	2.3	.66
Self-blame (COPE)	4.82	1.54	.63
General external control (BPCS)	41.98	7.48	.23
Exagginternal control (BPCS)	66.08	9.6	.23
God-mediated control (BPCS)	26.8	14.16	-.04
Superstitious Behavior (SRQ)	42.24	40.77	.87
Age	22.71	4.38	

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1   Table 4

2   *Sequential Regression Analyses Predicting Superstitious Behavior from Coping and Personal*
3   *Control Measures*

Predictor	B	SE B	β	ΔR^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	
ExaggInternal 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	
ExaggInternal control	-0.69	0.23	-.16**	
God-Med. Control	-0.24	0.23	-.09	
Denial	2.26	1.71	.08	
Behavioraldisengagement	5.52	1.75	.17**	
Venting	3.65	1.63	.11*	
Humour	0.76	1.29	.03	
Self-blame	-4.80	1.38	-.18**	

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5   *Note: *p<.05   **p<.01 *** p<.001*

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1   Table 5

2   *Mean scores for superstitious behavior*

Dependent Variable	Factors	Obtained		Adjusted	
		Mean	Std. Deviation	Mean	Std. Deviation
	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
Superstitious Behavior	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

3

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