

Superstitions: Illogical phenomena? Or Uniquely Useful Behaviours?

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One of the earliest descriptions of superstitious behaviours was given to us by B.F. Skinner when he used the term to describe the particular behaviours produced by pigeons in an attempt to obtain food rewards. The animals were being rewarded on a predetermined schedule, regardless of the actions performed. Skinner observed that the behaviours being carried out by the pigeons when the food happened to be presented, seemed to become associated with this reward, even though the action was not actually responsible for its appearance (Skinner, 1948). He postulated that the chance behaviours were inadvertently paired with the reinforcing food stimulus, leading the animals to develop an illusion of control over the delivery of rewards (Skinner, 1948). More specifically, superstition can be defined as an individual's erroneous view that they have the power to impact the end result of a particular situation, when in reality, they wield no influence over the situation's outcome (Rudski, 2004, as cited in Wright & Erdal, 2008).

A factor that seems to be associated with all forms of superstitious behaviours is circumstances of uncertainty. Therefore, in an attempt to explain the main motivator that leads to the expression of superstitious behaviours, the uncertainty hypothesis was proposed (Burger & Lynn, 2005). Essentially, this hypothesis states that under uncertain circumstances, organisms will attempt to gain control over the situation by engaging in superstitious behaviours (Vyse, 1997; as cited in Wright & Erdal, 2008). In other words, the uncertainty hypothesis predicts that organisms will rely more heavily on superstitions when they attribute the consequences of a situation to chance or luck (Burger & Lynn, 2005).

One of the earliest descriptions of uncertainty mediated superstitious behaviour was described by Malinowski in 1954 (as cited in Burger & Lynn, 2005). He recounted his observations of Melanesian fishermen from the early 20th century, who performed elaborate

superstitious rituals prior to embarking on fishing expeditions in the more dangerous open ocean, while omitting these rituals when fishing in calm shallow waters. Malinowski surmised that the fisherman employed superstitious rituals in order to gain some control over the dangerous uncertainties present in open-sea finishing (Burger & Lynn, 2005).

Another poignant example of increases in superstitious behaviours mediated by uncertainty was observed in Israel during the Gulf War. Israelites living in regions more vulnerable to missile attacks reported elevated superstitious beliefs when compared to those not under constant fear of being attacked (Burger & Lynn, 2005).

In addition to establishing control over uncertain situations, the use of superstitious behaviours are thought to lead to greater levels of self-efficacy (Wright & Erdal, 2008). Self-efficacy refers to an individual's level of confidence in their ability to successfully perform and/or accomplish a task (Feltz, Short, & Sullivan, 2008). Support for the hypothesis that performance improvements brought about by the use of superstitious behaviours are due to an increase in self-efficacy was provided by Damisch, Stoberock, and Mussweiler (2010). They evaluated the underlying psychological processes that lead to the improved performance often observed after the use of superstitious behaviours. It was found that the inclusion of a superstition increased the perceived self-efficacy of participants, leading to improved performance (Damisch et al., 2010).

Conversely, individuals who feel they have no control whatsoever over a situation, and who fail to avail themselves of superstitious behavioural techniques to try and gain a certain amount of control, often display low self-efficacy and learned helplessness-type behaviours (Bandura, 1997; Hanley & Long, 1995, as cited in Wright & Erdal, 2008). Learned helplessness is said to occur when an organism learns that their actions have no impact on an aversive event, such as receiving a shock or repeatedly being demoralized by uncontrollable life events. Once

learned helplessness is acquired, even if the situation changes, allowing the organism to successfully escape the aversive event, the organism's lack of responding will persist (Martinko & Gardner, 1982).

As an extension of the uncertainty hypothesis, Gmelch (1974, as cited in Wright & Erdal, 2008) proposed that the level of superstitious behaviour expressed was related to how difficult and uncertain a task was. He developed this theory after observing superstitious behaviours among baseball players. He found that batters displayed significantly more superstitious behaviours than players who were fielding. He attributed this imbalance to the increased uncertainty and difficulty associated with batting when compared to the relative certitude of successfully completing a fielding play (Wright & Erdal, 2008). Gmelch failed to empirically test his hypothesis, however, the endeavour was taken on by Wright and Erdal (2008), who utilized a golf based experimental design to evaluate the effect of task difficulty on the expression of superstitious behaviours.

Following each put, participants had to choose one of four differently coloured golf balls to use for their next attempt. Choosing the same coloured ball following a successful put was operationally defined as an example of superstitious behaviour. In the case of individuals classified as 'high skill', significantly more superstitious behaviour was observed under the high difficulty condition. In contrast to this finding, individuals classified as 'low skill' displayed significantly more superstitious behaviours under low difficulty conditions, and not under the high difficulty condition. While their findings concerning high skill individuals support the uncertainty hypothesis, results concerning low skill participants do not.

Wright and Erdal (2008) hypothesize that these seemingly counter intuitive results were due to the excessive arduousness of the high difficulty put for low skill participants. They state

that the low skill participants most likely gave up on the high difficulty task, exhibiting behaviour similar to that observed in learned helplessness (Wright & Erdal, 2008). The authors further speculate that in some uncertain situations, learned helplessness and superstition occur as opposing phenomena; while some individuals cope with uncertainty by acting in a superstitious manner, others develop learned helplessness and are no longer confident in their ability to successfully resolve the situation (Wright & Erdal, 2008).

As previously mentioned, Gmelch's hypotheses concerning the relationship between task difficulty and superstitious behaviours were based on observations of professional baseball players. Baseball, in particular, is a sport that is rife with superstitions (Burger & Lynn, 2005). In any given season, the best teams only win approximately 60% of their games, while bottom ranking teams win roughly 40%. As a matter of fact, some experts on baseball statistics have asserted that in any given year, the top team in the league will only win the championship more or less 50% of the time (Wood, 2000, as cited in Burger & Lynn, 2005). An additional factor that has been proposed to influence the prevalence of superstitious behaviours is based on cultural differences among athletes. Superstitions are thought to play a greater role in more individualistic cultures, such as the United States, and have less of an impact in collectivist cultures, like Japan (Burger & Lynn, 2005).

To further investigate these phenomena, Burger and Lynn (2005) assessed superstitious behaviours among expert athletes. Their study sought to evaluate the applicability of the uncertainty hypothesis in the case of professional baseball players. As a second goal, the authors were also interested in any possible cultural differences, in terms of superstitious behaviours, between American and Japanese players (Burger & Lynn, 2005). They anticipated that players who were more convinced that chance and good fortune could influence the outcome of a game

would display significantly more superstitious behaviours. They also predicted, in line with Gmelch's observations, that individuals would have more confidence in their ability to superstitiously influence the end result when batting than when fielding. Finally, Burger and Lynn (2005) predicted that American baseball players would engage in more superstitious rituals than their Japanese counterparts.

Results confirmed the widespread occurrence of superstitious behaviours among professional baseball players. The authors state that these findings are congruent with predictions made by the uncertainty hypothesis; because of the highly uncertain nature of the sport, athletes seem to be trying to influence game play in any way that is available to them, even if these behaviours are not logically linked to better performance (Burger & Lynn, 2005). In support of their first hypothesis, it was found that the more a player was convinced that luck could influence a game, the greater the probability that the athlete would take part in superstitious rituals. However, the authors failed to find support for the notion that superstitious behaviours would be more prevalent when batting than when fielding. Burger and Lynn (2005) attempt to reverse their original hypothesis by stating that professional baseball players are so confident in their fielding skills, that when they do make a mistake they are more likely to attribute it to external factors, such as a 'bad hop'. Unfortunately, such post-hoc explanations of behavioural findings breeds scepticism and reduces the perceived strength of the theory used to predict the study's outcome. While the uncertainty hypothesis does seem to explain a large proportion of instances of superstitious behaviour, certain aspects of the phenomenon remain to be properly understood.

In regards to their final hypothesis, the authors found that American players were indeed more likely to employ superstitious behaviours than their Japanese peers, supporting the view that individualistic cultures encourage superstitious behaviours more than collectivist cultures

(Burger & Lynn, 2005). Perhaps the most interesting finding of this study was related to the players perceived confidence that their superstitious behaviours could significantly influence their athletic capabilities or the end result of a game. Burger and Lynn (2005) found that even though athletes engaged in their individual superstitious rituals almost every game, they professed that they had little faith in the actual effectiveness of these behaviours. The authors present a few psychological explanations as to why players would engage in superstitious behaviours if they do not actually feel that they are beneficial, such as seeking comfort from the ritual, or conforming to the expectancy that professional athletes should take part in superstitious behaviours (Burger & Lynn, 2005). However, there may be an alternate explanation for these seemingly counterintuitive findings, based on an evolutionary theory, which will be discussed later.

While all of the studies presented thus far have focused on superstition in athletes, the phenomenon is also widely observed among students. Rudski and Edwards (2007) conducted an experiment in which they evaluated the effects of different situational factors on the use of superstitious behaviours. They sought to investigate what type of circumstances would increase, or decrease, the likelihood of engaging in a superstitious ritual. Specifically, they surveyed college students concerning their use of superstitions and rituals in three well-known or easy to conceptualize situations; test-taking, athletic competition, and dance performance. They varied three experimental factors (difficulty of the situation, amount of preparation, and level of importance associated with the outcome) to determine their possible influences on the probability of producing superstitious rituals (Rudski & Edwards, 2007). It was hypothesized that as task difficulty and perceived significance of the outcome escalated, and level of preparation

decreased, an increase in the occurrence of superstitious behaviours would be observed (Rudski & Edwards, 2007).

Overall, the results of Rudski and Edward's (2007) study lend credence to the uncertainty hypothesis. They found that Participants were more likely to use charms or superstitious rituals in instances of high task difficulty, insufficient preparation, and in situations where the outcome is highly important, for all of the scenarios described (Rudski & Edwards, 2007). Additionally, all three variables were associated with an increase in the participants illusions of control, referring to illogical beliefs that an individual can personally govern the outcome of an uncontrollable situation. As the outcome importance or task difficulty increased, and level of preparedness decreased, there was a simultaneous increase in illusions of control (Rudski & Edwards, 2007). These findings seem quite logical. Take, for instance, the example of elevated outcome importance; when the stakes are incredibly high, it makes sense that an individual would employ superstitious rituals to convince themselves that they have some sort of control over the situation, otherwise, that individual might just give up and wait for the inevitable to happen. The authors take this interpretation one step further by stating that developing illusions of control can prevent the development of learned helplessness. In fact, Rudski and Edwards (2007) state that it is quite probable that superstitious behaviours serve an adaptive function; by allowing an individual to feel that they have some control over a difficult and uncertain situation, superstitions could interfere with the initiation of learned helplessness (Matute, 1994, as cited in Rudski & Edwards, 2007).

Rudski and Edwards (2007) also discussed interesting findings concerning how effective participants perceived their superstitions to be. While the majority of participants did indeed engage in superstitious behaviours, in most cases, they did not report a high level of ritual

efficacy. This means that while they do employ superstitions in certain situations, the majority of individuals don't actually believe that these behaviours will significantly change the outcome of the situation (Rudski and Edwards, 2007). This finding is almost identical to the observations made by Burger and Lynn (2005) concerning how effective professional baseball player's perceived their superstitious behaviours to be. These types of results seem counterintuitive; why would individuals expend mental and physical energy engaging in superstitious rituals if they don't actually believe them to be significantly useful?

While the majority of researchers seem to ascribe the main cause of superstitious behaviours solely to the uncertainty hypothesis, Foster and Kokko (2012) have proposed a contrasting view of the phenomenon. They make the argument that all organisms, humans included, have evolved an inherent propensity to develop superstitious behaviours. This evolutionary hypothesis proposes that natural selection will encourage incorrect causal associations, as is most often the case for superstitions, as long as some of these faulty associations lead to an increased change of survival and reproduction. In other words, some superstitious beliefs and/or actions, such as crop planting rituals or hunting superstitions, led to the increased fitness of those to engaged in such behaviours. These behavioural tendencies are then inherited from one generation to the next, leading to an organisms innate tendency to develop superstitious behaviours (Foster and Kokko, 2012).

While the evolutionary explanation alone does not appear to be able to account for the broad range of superstitious behaviours observed in humans, it may partially explain the curious inconsistencies in terms of the perceived effectiveness of superstitions. Although humans may be cognizant of the fact that their superstitions lack the ability to significantly alter the outcome of a

situation, the widespread development of such behaviours would seem to indicate a biological predisposition to the establishment of superstitious rituals.

Although all aspects of superstitious behaviours may not be completely understood, one thing is abundantly clear; superstitions influence numerous aspects of human behaviour. And a proper understanding of why we engage in such practices, as well as fully appreciating how these superstitions ameliorate performance, could allow the human race to optimally wield this powerful psychological phenomenon.

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