

THE SCIENCE OF SUPERSTITION

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Former Red Sox player Wade Boggs, known as the “chicken man,” famously ate chicken before every one of his games as a good luck charm. Boggs told MLB.com, “In 1983, we ate chicken every day, and I wound up winning a batting title in '83. So, the chicken worked.” While this pre-game ritual may have supplied Boggs with protein and energy, it’s unlikely that chicken directly caused his baseball success. Regardless, this was still a habit he never broke.

Boggs is certainly not the only person to exhibit superstitious behavior. Many people practice rituals before big games, exams, or interviews while others believe in good luck charms like lucky socks or four-leaf clovers. Boggs’ thinking illustrates the illusion of causality, the belief that one event causes another when in fact, the two events do not have any causal relationship.

Superstition is prominent in many cultures; one commonality across superstitious beliefs is that they tend to assume implausible or illogical causal relationships, almost akin to magic. And yet, people who recognize the limited logic underlying these beliefs continue to follow them. In fact, according to a 2022 review, scientists have failed to definitively link paranormal and superstitious beliefs with lower academic achievement and intelligence. This signals that it is not a lack of intelligence that prompts causal superstitious thought. Rather, these illusions can influence anybody, since the human brain naturally tends to draw causation from coincidence, shedding light on the human nature of rationality.

Superstitions bring about feelings of safety and reward and often have very little cost associated with them. One paper also notes that they tend to be “prevalent in conditions of absence of confidence, insecurity, fear and threat, stress and anxiety.” Given the number of events out of one’s control, superstitious rituals allow people to have increased feelings of control over their lives — purposely avoiding the number 13 or shattered mirrors makes people feel like they can prevent negative fates. Furthermore, most of these actions have a very low cost associated with them and potentially great reward. It’s easy to carry a good luck charm or forward a chain email; it’s a lot harder to deal with a bad exam grade or have a “curse” follow you around.

The feeling of safety after a simple ritual is well worth it for many superstition believers. This illustrates the illusion of control, a psychological phenomenon that causes humans to believe that their own intervention directly produces a resulting event, even when it likely does not. One study found “a direct relationship between a person’s level of self-reported superstitious belief and both the likelihood of experiencing an illusion of control and its perceived magnitude.” This highlights the tendency of these individuals to conflate results with certain actions, even when there is limited rational evidence to support these connections.

Another study explained that “superstition has its roots in our species’ youth, when our ancestors could not understand the forces and whims of natural world. Survival of our ancestors was threatened by predation, or other natural forces.” Thus, many superstitions came about because they brought protection to previous generations. For our ancestors, causal illusions were sometimes the only way to make sense of the world, and the longevity of this phenomenon shows how it is a natural human reaction.

Although illusions of causality have evolved over time, they are crucial to consider today because of their larger societal ramifications. Amplification of inaccurate causal relationships can create harm in several areas including, but not limited to, science, medicine, and politics.

One notable example is the surge in popularity of the anti-vaccination movement in the late 1990s, triggered by a misleading study conducted by the now-discredited Andrew Wakefield. This study, a case report with anecdotes about 12 children, erroneously concluded that the measles-mumps-rubella (MMR) vaccine causes autism. An article summarizing Wakefield’s paper and its aftermath clearly explains the causal illusion, stating that “many children have autism and nearly all take the MMR vaccine. Finding in this case that among a group of a dozen children most of them happen to have both is not at all surprising. And it in no way proves the MMR vaccine causes autism.”

Despite being rejected in the scientific community, Wakefield’s paper (and its amplification in the media) reignited a dangerous global movement of vaccine skepticism. This flawed study highlights the danger of causal illusions, since a researcher mistakenly linked factors without true scientific correlation, sparking vaccine refusal that continues to threaten public health today. In an age where misinformation driven by superstitions is easily disseminated, it is crucial to be aware of cognitive biases like the illusion of causality.

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