Scientists have established a link between brain damage and religious fundamentalism

by Bobby Azarian via jaxie - Raw Story *Wednesday, Jan 9 2019, 8:50pm*
international / prose / post

[Is Anyone Surprised?]

> A study published in the journal Neuropsychologia has shown that religious fundamentalism is, in part, the result of a functional impairment in a brain region known as the prefrontal cortex. The findings suggest that damage to particular areas of the prefrontal cortex indirectly promotes religious fundamentalism by diminishing cognitive flexibility and openness—a psychology term that describes a personality trait which involves dimensions like curiosity, creativity, and open-mindedness.

Religious beliefs can be thought of as socially transmitted mental representations that consist of supernatural events and entities assumed to be real. Religious beliefs differ from empirical beliefs, which are based on how the world appears to be and are updated as new evidence accumulates or when new theories with better predictive power emerge. On the other hand, religious beliefs are not usually updated in response to new evidence or scientific explanations, and are therefore strongly associated with conservatism. They are fixed and rigid, which helps promote predictability and coherence to the rules of society among individuals within the group.

Religious fundamentalism refers to an ideology that emphasizes traditional religious texts and rituals and discourages progressive thinking about religion and social issues. Fundamentalist groups generally oppose anything that questions or challenges their beliefs or way of life. For this reason, they are often aggressive towards anyone who does not share their specific set of supernatural beliefs, and towards science, as these things are seen as existential threats to their entire worldview.

Since religious beliefs play a massive role in driving and influencing human behavior throughout the world, it is important to understand the phenomenon of religious fundamentalism from a psychological and neurological perspective.

To investigate the cognitive and neural systems involved in religious fundamentalism, a team of researchers—led by Jordan Grafman of Northwestern University—conducted a study that utilized data from Vietnam War veterans that had been gathered previously. The vets were specifically chosen because a large number of them had damage to brain areas suspected of playing a critical role in functions related to religious fundamentalism. CT scans were analyzed comparing 119 vets with brain trauma to 30 healthy vets with no damage, and a survey that assessed religious fundamentalism was administered. While the majority of participants were Christians of some kind, 32.5% did not specify a particular religion.

Based on previous research, the experimenters predicted that the prefrontal cortex would play a role in religious fundamentalism, since this region is known to be associated with something called ‘cognitive flexibility’. This term refers to the brain’s ability to easily switch from thinking about one concept to another, and to think about multiple things simultaneously. Cognitive flexibility allows organisms to update beliefs in light of new evidence, and this trait likely emerged because of the obvious survival advantage such a skill provides. It is a crucial mental characteristic for adapting to new environments because it allows individuals to make more accurate predictions about the world

under new and changing conditions.

Brain imaging research has shown that a major neural region associated with cognitive flexibility is the prefrontal cortex—specifically two areas known as the dorsolateral prefrontal cortex (dlPFC) and the ventromedial prefrontal cortex (vmPFC). Additionally, the vmPFC was of interest to the researchers because past studies have revealed its connection to fundamentalist-type beliefs. For example, one study showed individuals with vmPFC lesions rated radical political statements as more moderate than people with normal brains, while another showed a direct connection between vmPFC damage and religious fundamentalism. For these reasons, in the present study, researchers looked at patients with lesions in both the vmPFC and the dlPFC, and searched for correlations between damage in these areas and responses to religious fundamentalism questionnaires.

According to Dr. Grafman and his team, since religious fundamentalism involves a strict adherence to a rigid set of beliefs, cognitive flexibility and open-mindedness present a challenge for fundamentalists. As such, they predicted that participants with lesions to either the vmPFC or the dlPFC would score low on measures of cognitive flexibility and trait openness and high on measures of religious fundamentalism.

The results showed that, as expected, damage to the vmPFC and dlPFC was associated with religious fundamentalism. Further tests revealed that this increase in religious fundamentalism was caused by a reduction in cognitive flexibility and openness resulting from the prefrontal cortex impairment. Cognitive flexibility was assessed using a standard psychological card sorting test that involved categorizing cards with words and images according to rules. Openness was measured using a widely-used personality survey known as the NEO Personality Inventory. The data suggests that damage to the vmPFC indirectly promotes religious fundamentalism by suppressing both cognitive flexibility and openness.

These findings are important because they suggest that impaired functioning in the prefrontal cortex—whether from brain trauma, a psychological disorder, a drug or alcohol addiction, or simply a particular genetic profile—can make an individual susceptible to religious fundamentalism. And perhaps in other cases, extreme religious indoctrination harms the development or proper functioning of the prefrontal regions in a way that hinders cognitive flexibility and openness.

The authors emphasize that cognitive flexibility and openness aren’t the only things that make brains vulnerable to religious fundamentalism. In fact, their analyses showed that these factors only accounted for a fifth of the variation in fundamentalism scores. Uncovering those additional causes, which could be anything from genetic predispositions to social influences, is a future research project that the researchers believe will occupy investigators for many decades to come, given how complex and widespread religious fundamentalism is and will likely continue to be for some time.

By investigating the cognitive and neural underpinnings of religious fundamentalism, we can better understand how the phenomenon is represented in the connectivity of the brain, which could allow us to someday inoculate against rigid or radical belief systems through various kinds of mental and cognitive exercises.

https://www.alternet.org/2019/01/scientists-have-established-link-between-brain-damage-and-religious-fundamentalism/

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