Time to kill the scientific zombie that is the 'nature vs. nurture' debate

May 13 2020, by Mark Hathaway

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A scientific article out of the University of Otago's Department of Zoology is calling for an end to the seemingly unkillable "nature versus nurture' debate, which the authors say creates damaging sways in the

public's view of science.

Professors Hamish Spencer of Otago, and Marlene Zuk of the University of Minnesota, have had their views published today in the journal *BioScience*. Their article confronts the debate they liken to a zombie that is "nature v nurture," or put another way, that either your genes (nature) or your environment (nurture), dictate the outcomes in your life.

"The dilemma is particularly clear with regard to behavioral traits, such as intelligence or sexual orientation, where thinking that someone's genes or the environment they live in is the sole or main cause of their situation. This view can lead to flawed conclusions such as excusing bad behavior as inevitable because it is in the genes," says Professor Spencer.

The authors argue that, first, behavior is not special in its evolution but evolves in the same manner as other traits. Second, no trait, whether behavioral or otherwise, is caused by either genes or the environment or even by an additive combination of the two; the interaction is the important feature. Third, genes do not and cannot code for behavior or any other characteristic.

"What we mean by this is that the effect of genes depends on the environment, just as much as the effect of environment depends on the genes. For example, babies with two copies of a defective PAH gene cannot properly metabolize the amino acid phenylalanine, which builds up in their bloodstream and eventually leads to severe intellectual disabilities. This condition, phenylketonuria (commonly known as PKU) occurs, however, only when the babies' diets contain phenylalanine; in its absence, babies develop quite normally. So, the effect of the PAH genes depends on the diet (the environment), but also the effect of the diet depends on whether or not the babies have two defective PAH genes," says Professor Spencer.

Professors Spencer and Zuk hope their views positively influence discussions around behavior and evolutionary biology.

"It's easy to say well, why does this matter? Could we not just let the zombie wander the landscape, shedding DNA like rotten body parts and moaning about inheritance? We think not. The zombie needs to die, because, otherwise, we continue to have fruitless debates about the inherent nature of sexism or of genius," Professor Spencer adds.

More information: Marlene Zuk et al. Killing the Behavioral Zombie: Genes, Evolution, and Why Behavior Isn't Special, *BioScience* (2020). DOI: 10.1093/biosci/biaa042

Provided by University of Otago

Citation: Time to kill the scientific zombie that is the 'nature vs. nurture' debate (2020, May 13) retrieved 26 June 2024 from https://phys.org/news/2020-05-scientific-zombie-nature-nurture-debate.html

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