Statistical significance under low power: A Gettier case?

Daniel J. Dunleavy

Journal of Brief Ideas

Epistemologists and researchers alike are concerned with the conditions under which one can be said to possess knowledge. In philosophy there is a classic account of knowledge as being "Justified True Belief". Under this account, a person can only truly know something if they have a belief that is both justified and true (i.e. knowledge as JTB).

For example: An individual S *knows* a proposition P, iff (if and only if):

i) S believes that P, ii) P is true, and iii) S is *justified* in believing that P.

So-called "Gettier cases" arise when an individual is justified in believing something to be true and yet would probably not be said to have knowledge because they only got the right answer as a result of **luck**.

I posit that some instances in classical (frequentist) statistics are analogous to Gettier cases: A researcher who performs a study with low power, in which the alternative hypothesis is true, AND who observes a significant p-value, could be considered to be "lucky", given the likelihood that they would've observed non-significant findings. Still, they have inferred from that the alternative hypothesis is true; despite the improbability of doing so. It is unclear whether or not this should be considered "knowledge", under JTB.