

Lykken D T. Statistical significance in psychological research.
Psychol. Bull. 70:151-9, 1968.
[University of Minnesota, Minneapolis, MN]

It was argued that a statistically significant finding, confirming a direction prediction based on a psychological theory, is usually an insignificant event. Replicability is the real desideratum. Three types of replication were identified and their importance discussed in terms of examples from the literature. [The *Science Citation Index*® (SCI®) and the *Social Sciences Citation Index*® (SSCI®) indicate that this paper has been cited in over 175 publications since 1968.]

David T. Lykken
Mayo Hospital
University of Minnesota
Minneapolis, MN 55455

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"This paper was turned down by the journal to which it was first sent because the editor found its style too racy and polemical. I believe that psychology in the twentieth century is a shambling sort of enterprise attempting to become a scientific discipline and is beset by many difficulties, some of its own making. My intention in this paper was to point out one of these self-imposed obstacles that had become institutionalized as part of our research tradition. When one is attacking a tradition, it is hard to avoid polemics; when one is pointing out a blind spot, it

is natural to wave one's arms about.

"The flaw I had in mind was the use of statistical significance as a kind of scientific shibboleth. Since the null hypothesis is almost always false, one has a fifty-fifty chance of confirming most theoretical predictions, no matter how fatuous one's theory or illogical one's reasoning. Moreover, statistically significant findings are frequently not true and, as Darwin himself pointed out, false facts are far more mischievous than false theories. R.A. Fisher explained in 1929 that replicability, not statistical reliability, is the real desideratum.¹

"Psychologists trained at the University of Minnesota in the 1950s had a tendency, which I later overcame, to believe that scientists should be guided by philosophers of science. I was surprised at the time to discover that philosophers of science had not analyzed the important concept of replication. My own amateur analysis, which distinguished between 'literal,' 'operational,' and 'constructive' replication, still seems to me to be valid and useful.

"I think the article was popular because it said what many psychologists already believed and wanted to pass on to their students. The research strategy based on a series of overlapping studies in which each replicates and extends the one preceding has recently been advocated again by Muller, Otto, and Benignus."²

1. Fisher R A. The statistical method in psychical research. *Proc. Soc. Psychical Res.* 39:189-92, 1929.
2. Muller K, Otto D & Benignus V. Design and analysis issues and strategies in psychophysiological research. *Psychophysiology* 20:212-18, 1983.