

Health Bulletins on Null Hypothesis Significance Testing

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Epistemologies evolve, gain traction, become widely accepted, and then decline. Examples include the descriptive methods of 19th century biology and authoritarian pronouncements earlier. Null hypothesis significance testing (NHST) evolved early in the 20th century, was dominant in many disciplines by mid-century, and began to be challenged by the end of that century.

1. Do you explain the NHST controversy to your students?
2. Do you hand out or recommend supplementary materials to your students?

References

1. In March 2019, the American Statistical Association published 43 papers (all Open Access) in a special issue of *The American Statistician*. The lead editorial (Wasserstein, Schirm, & Lazar) is "Moving to a world beyond ' $p < 0.05$.'" It addresses reasons not to trust p values, the difficulty of moving beyond NHST, new approaches to data analysis, and recommendations of how to proceed. (20 pages).
2. There are six half-hour videos by Geoff Cumming on the APS website that address the NHST controversy and recommend a "new statistics" approach: effect size indexes, confidence intervals, and meta-analysis.
3. Two chapters in the 2018 *Annual Review of Psychology* are helpful.
 - a. This chapter lists concerns about NHST and the larger issue of how we should conduct science. Shrout, P. E. & Rodgers, J. L. (2018, pp. 487-510)

"Psychology, science, and knowledge construction: Broadening perspectives from the replication crisis"
 - b. This chapter summarizes the recent improvements in the methodology used by psychologists. It identifies p -hacking as more important than the file-drawer problem. Nelson, L. D., Simmons, J., & Simonsohn, U. (2018, pp. 511-535)

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