

Evaluating the replicability of laboratory experiments in economics*

Reproducibility is an important measure of validity in all fields of experimental science. If one researcher publishes a scientific result obtained in his or her laboratory, another researcher should be able to follow the same protocol and achieve the same result in another laboratory. However, in recent years many results observed or obtained in a variety of academic disciplines have been questioned on their lack of reproducibility.

In the path-breaking Reproducibility Project Psychology (RPP), led by Brian Nosek, researchers replicated 100 original studies published in three top journals in psychology. They found that although 97 percent of the original studies reported so-called "positive findings" (meaning a significant change compared to control conditions), such positive findings could be reliably reproduced only 36 percent of the time.

Inspired by the RPP, a collaborative study between research groups at the California Institute of Technology, the National University of Singapore, the Stockholm School of Economics and the University of Innsbruck replicated studies in experimental economics and found that results published in that field were actually quite reliable.

Specifically, the team replicated 18 studies published in the *American Economic Review* and the *Quarterly Journal of Economics* between 2011 and 2014. All replications followed preregistered analysis plans identical to the originals, and maintained a statistical power of at least 90 percent to detect the original effect size at the 5 percent significance level.

The authors found a significant effect in the same direction as the original study for 11 replications (61 percent); on average the replicated effect size was 66 percent of the original. The reproducibility rate varied between 67 percent and 78 percent for four additional reproducibility indicators, including a prediction market measure of peer beliefs.

These results suggest that published results in experimental economics are better than average when it comes to reproducibility.

The full paper is available at <http://science.sciencemag.org/content/early/2016/03/02/science.aaf0918>

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