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News from the field

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PSYCHOLOGICAL SCIENCE

Failure to replicate?

Gilbert, D. T., King, G., Pettigrew, S., & Wilson. T. D. (2016). Comment on "Estimating the reproducibility of psychological science". *Science*, 351 (6277): 1037-b.
DOI: 10.1126/science.aad7243

Anderson, C. J., Bahník, S., Barnett-Cowan, M., Bosco, F. A., Chandler, J., Chartier, C. R., Zuni, K. (2016). Response to comment on "Estimating the reproducibility of psychological science". *Science*, 351 (6277): 1037-c.
DOI: 10.1126/science.aad9163

In August 2015 the Open Science Collaboration (OSC) published a massive failure to replicate for roughly half of the 100 psychology studies examined in a reproducibility project (Open Science Collaboration, 2015). In March 2016 the OSC findings were called into question in a commentary published in *Science* (Gilbert et al., 2016). Gilbert and colleagues described a number of major issues with the OSC study, including the amount of error introduced by failing to strictly follow the protocols of the original studies. For example, many of the replication studies used samples from different populations than those used by the original studies. Further, many OSC replication attempts implemented substantially different methods than the original study. For example, one original study that asked Israeli participants to imagine the consequences of military service was replicated by asking American participants to imagine the consequences of a honeymoon. Gilbert and colleagues estimated that the error introduced by these differences alone meant that roughly one-third of the attempted replications should have failed, regardless of the actual reproducibility of the original study.

In the same March issue of *Science*, the replicators responded to the Gilbert et al. commentary (Christopher et al., 2016). Their response to the accusation of "low-fidelity protocols" included that the original authors recommended or endorsed some of the protocols and that some of the replication studies did replicate the original findings despite large differences in protocols. Christopher et al. went on to argue that the protocol of any attempt to replicate will differ based on numerous factors such as facilities, personnel, and equipment. They described the OSC definition of direct replication as "the attempt to recreate the conditions believed sufficient for obtaining a previously observed finding". The replicators further suggest that scientists should embrace replications that implement protocol changes because the potential for hypothesis generation is created when the results differ, and results that do not differ under protocol changes importantly demonstrate generalizability.

All three of the *Science* publications mentioned here raise important issues outside this short summary, but they all point to an emerging issue that strikes at the heart of our field. Consider the publicity the OSC results received as a runner up for *Science's* Breakthrough of the Year in 2015, negatively effecting public impressions of reproducibility in psychology. As scientists, we need to get to the heart of failures to replicate. Examining reproducibility and the boundary conditions of our work is imperative to advancing our field. However, large-scale replication attempts that fail to disclose important methodological details do not allow for alternative hypothesis generation or the demonstration of generalizability. Examining reproducibility one project at a time, using the well-established peer-review process where methods and design differences are clearly described and conclusions are thoughtfully examined by experts in the field may ultimately prove to be a superior avenue for carefully adding to the knowledge base. –Ashleigh M. Maxcey

Additional References:
Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, 349 (6251), 943. DOI: 10.1126/science.aac4716

ATTENTION

Attention and attractiveness

Störmer, V.S., & Alvarez, G.A. (2016). Attention alters perceived attractiveness. Psychological Science. doi:10.1177/0956797616630964

It has been repeatedly demonstrated that attention can impact the perception of low-level visual features in addition to improving performance across a variety of tasks. A new study by Störmer and Alvarez has extended these findings to demonstrate that attention can also influence higher-order properties: specifically, the perceived attractiveness of a face. Participants completed a task in which two faces were presented on each trial—one on either side of fixation and with one face shifted upward and the other downward relative to the vertical axis—and were required to judge the vertical position of the face they deemed more attractive. On the majority of trials, different faces were presented to each visual field, however, the two faces were identical on one-third of trials. Critically, prior to face onset, an exogenous cue (a black dot) was presented at the location of one of the faces. On the crucial matched-face trials, participants tended find the face at the cued location to be more attractive, providing evidence that exogenous attention can moderate perceived attractiveness. A follow-up experiment in which cue-target SOA was manipulated demonstrated that this effect is limited to early perceptual processing such that no preference for the cued face was present after a longer cue-target SOA. This finding adds to the literature demonstrating that attention can impact early perceptual processing which can in turn influence higher level decisions. –Michael D. Dodd