Form hypothesis, collect data, publish, repeat. At its most basic form, this describes the cycle researchers in all fields are familiar with. They perpetuate their own cycle of research ideas, data collection, and analyses, and are thus shaded from other scientists’ scrutiny. The steps taken to uncover new breakthroughs are themselves covered. This blinding veil has led to some of the most unethical fraud and false discoveries in science. It’s influenced us to think twice about how we eat a buffet dinner (Lee, 2018), and to believe that we can see into the future (Engber, 2017).

Scientific study can be described as an iceberg, with a majority of the work gone unseen. Beneath the surface, researchers are prone to making mistakes that alter the outcomes of their studies. “P-hacking”, for example, develops faulty analyses that are then published in journals as false positive reports (Nelson et al, 2017). Because these fabricated results are nearly impossible to replicate (a necessity in the fundamentals of the scientific method), researchers have now realized that hiding the cycle of research is detrimental to its accuracy. In the years 2010-2012, the “replication crisis” erupted, and influential studies like Brian Winsink’s deceptive buffet analysis or Daryl Bem’s eyes into the future could not be replicated thenceforth. If experiments lack reliability, their validity then comes into question.

To address these issues, Brian Nosek and Jeffery Spies began the Open Science movement to aid other scientists by creating an online platform in which they could openly record, report, and share data (Nelson et al, 2017). Their foundation, the Center for Open Science, allows collaboration of researchers in any stage of research development. The cycle of open science unfolds the research process for every aspect of research to be shared.

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