

Conversation between Professor Brian Nosek (University of Virginia, Department of Psychology) and Holden Karnofsky (GiveWell) on 10/09/12.

### **Summary:**

GiveWell spoke with Prof. Brian Nosek as a part of GiveWell's investigation of meta-research as a cause. Prof. Nosek is an academic researcher who studies the gap between the scientific values of openness and reproducibility and actual practice in the scientific community, and is interested in bridging this gap.

Prof. Nosek believes that there are currently inadequate incentives for replication and for maximal openness (e.g., sharing data and code publicly). He believes that these incentives can be improved, and that one promising path to doing so is providing academics with tools that are useful to them and make it easy to practice openness.

He is currently conducting an attempt to publicly replicate many of the best-known papers in psychology, as well as working on the Open Science Framework, which seeks to provide tools for documenting, archiving and sharing one's work.

### **Full Notes:**

This is a set of notes compiled by GiveWell in order to give an overview of the major points made by Brian Nosek in conversation.

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### **Openness in scientific research**

Scientific research is open in the sense that researchers publish papers on their research in journals. However, given the technological resources available to us, openness in science is quite low. Unpublished studies that could reveal publication bias and researchers' full data sets and materials are often not available.

### **The importance of a good archiving and documentation system**

Many scientists lack a good archiving and documentation system. This poses a barrier to scientists making their data and materials public. They would be more likely to do so if they had access to a standardized archiving and documentation system that had an easy function to make their data and materials public. The Open Science Framework aims to become this.

There is a for-profit company called Figshare, which provides an easy mechanism for researchers to share their materials with one another. This is useful, but the cost of the service poses an obstacle to researchers, and to promote sharing, sharing should be made as easy as possible. For this reason, it would be desirable for there to be a free service of a similar type sponsored by journals, universities and nonprofit funders.

## **Journals promoting openness and replication:**

It's important that journals, funders and institutional review boards think about how they can provide incentives for researchers to share their data and to replicate studies.

Journals can help by:

- Requiring that authors share their materials.
- Requiring that authors register their hypotheses for replication.
- Preregistering replications and precommit to publishing them independently of their results.

Prof. Nosek is editing a special issue of the journal *Social Psychology* which is going consist of preregistered replications. The researchers who did the study to be replicated will check the replication proposals' for study designs. The papers resulting from the approved proposals will be published whether they find a positive result or negative result, provided that the authors follow through with the design that they proposed.

## **Replications, prestige and incentives**

Standalone journals that publish replications exclusively would not significantly increase researcher's motivations to perform replications, because such journals would not be regarded highly. It's important that the publication of replications be integrated with existing journals so that doing replications gives researchers prestige.

Innovation will be rewarded more than replication regardless of whether journals publish replications. However, there are many well-trained researchers who are at less prestigious institutions where they aren't expected to innovate and don't have the resources to do groundbreaking innovative work. Many such researchers would be happy to contribute to science by replicating studies.

## **Adverse political consequences of publishing negative replications**

Researchers' reputations are diminished when their findings fail to replicate. For this reason, when junior researchers attempt to replicate senior researchers' findings and find that they don't replicate, the senior researchers will sometimes become angry with the junior researchers. This can have an adverse impact on the junior researchers' careers. Therefore, junior researchers have incentive to refrain from doing replications, or to confirm rather than negate the established findings. Furthermore, the senior researchers have opportunities to block the publication of negative results (e.g. if the senior researchers are selected by journals to be the peer reviewers for articles with such findings).

This problem could be partially mitigated by making the peer review process public. If it were public, then the peer reviewers would have strong incentive to accept solid negative replications, because it would be apparent if they were reject them without good reason.

## **Replication Project**

Prof. Nosek is working on a project to determine the portion of studies in psychology journals that are replicable. The project currently involves 75 researchers at 50 different institutions volunteering to conduct replications of a set of studies that Prof. Nosek and his collaborators selected for replication. Based on the results, it should be possible to get a sense for how common it is for psychology studies to be replicable. All of the data from this project will be made public. There hasn't been a formal preregistration process for the replications, but some of the replications have been preregistered and Prof. Nosek's group is starting a formal registration process.

## **Concerns about the replication project from the psychology community**

Some psychology researchers have expressed concern that some of the replications in the project may be of poor quality and give a negative result erroneously. Nosek's team's solution to this potential problem is to require that the researchers involved practice openness and communication. The replication teams are required to interact with the original researchers to get their materials so that they can do as fair a replication as possible. The materials and data used by the replication team will be made public.

Psychology researchers have also expressed concern about the project because they worry that if a large fraction of the studies selected in the project don't replicate then the field of psychology will be discredited and lose funding. Nosek believes that problems with existing research will come out eventually and that it's better to find out about any problems in the psychology literature sooner rather than later, so that the psychology community has time to correct errors early on rather than building on them.

## **Financial support**

Prof. Nosek is paying for the administrative costs of the replication project. The researchers who are doing the replications are volunteers who are covering the costs of their replications. Prof. Nosek is seeking funding for the project for the purpose of expanding it.

Nosek and his research group are working on a number of projects aside from the replication project. If these were to receive funding, the funding would serve as a stimulus. Professor Nosek can share a summary of these with GiveWell.