Recently, Brian Nosek and colleagues have unveiled the last iteration of the three-part series on [*Scientific Utopia*](https://twitter.com/BrianNosek/status/1029105998911295488)in which they lay out the necessary changes towards academic nirvana: [opening scientific communication](https://t.co/CVtwprjuRo), [restructuring incentives and practices](https://t.co/eIJXCrERyh), and [crowdsourcing science](https://psyarxiv.com/vg649). We believe there should be a fourth pillar ensuring the new generation of scholars does not repeat the mistakes of its predecessors. And the way towards that objective is to familiarize students - and hence future academics - with the intricacies of science from the getgo. That is, introducing undergraduate and graduate students to foundational subject-matters in tandem with open & reproducible scientific principles can create an atmosphere of constructive curiosity and sustainable development of open and reproducible practices.

Advancing science requires open, transparent, cumulative and reproducible research practices. These fundamental features of science increase the robustness of findings allowing for validity interpretation of results (McNutt, 2014). Unfortunately, these practices have been shown to be underutilized in practice (Ioannidis, Munafo, Fasar-Poli, Nosek, & David, 2014). Worse, questionable research practices are common (Fiedler & Schwartz, 2016), likely due to a misalignment of incentives for robust, replicable, and open research in the current academic publishing system (Higginson & Munafo, 2016). As a result, the replicability of previous research is in doubt (Ioannidis, 2005; Open Science Collaboration, 2015; Simmons, Nelson, & Simonsohn, 2011) and has been characterized as the “replication crisis”. The terminology of “credibility revolution” (Vazire, 2018), however, is more positive, reflecting widespread calls for improved practices.

Academics, in the past few years, have –and will continue to– reform scientific institutions (cf. TOP guidelines, DORA, BITSS) and informed more of their peers that the open-science era of has arrived for the social sciences. However, undergraduate - and to a large extent graduate - students go through their education process without hearing about the ‘replication crisis’ or ‘pre-registration’. And these students – i.e., future academics – can only be expected to know what they are taught. Indeed, they are next generation of researchers and should ultimately become the standard bearers of open and reproducibility science. For this reason, the lessons learned by their predecessors must be taught as a core components of their curricula. This is relevant because students don’t always understand that scientific claims should be taken in light of probabilistic uncertainty, research design, and samples and measurements used (Allie et al, 2003). A step further, educating students with a false sense of certainty is misleading and unethical. Indeed, it is stipulated in the Ethical Principles of Psychologists and Code of Conduct of the American Psychological Association (APA), Section 7, Accuracy in Teaching, that “when engaged in teaching or training, psychologists present psychological information accurately”. In light of reproducibility crisis, this means teaching the subject matter while communicating the possible caveats and uncertainty associated with any scientific work. In this paper, we present recommendations to improve the adoption of open science teaching practices by modifying the academic incentive structure and by streamlining the education pipeline.  In addition, a secondary goal was to start a conversation on - and inspire debates about - the ethics of teaching substantive topics/subjects without regard for the reproducible crisis in Science more generally, in social sciences in particular.

The reality of the matter, however, is that these practices are not imbued at the onset of new researchers’ careers. In doing so, we risk a recurrence of the closed and irreplicable practices that gave rise to the credibility revolution. To avoid this scenario - not to mention abiding by principled teaching and emphasis on inquiry-based methods for science teaching and learning - we argue that teaching reproducible and open research practices needs to be supported and incentivized. We propose that the teaching of reproducible and open research practices is the clearest indicator of the degree to which institutions and/or departments embody principles of credible science. And here we present a framework to evaluate the quality of education on better research practices, as well as a pathway towards ongoing improvement - the Framework for Open and Reproducible Research Training (FORRT). FORRT hopes to become an online source of teaching resources for faculty and institutions wanting to adapt the education of Psychological Science topics/subjects to the norms that would have precluded the current reproducibility crisis.

We advocate the teaching the substantive foundations of a given field/subject by contraposing its findings & claims to the newer and open scientific practice.