

Impact Sheet

Star, J. R. (2021). In Pursuit of a Replication Culture in Mathematics Education.

Implementation and Replication Studies in Mathematics Education, 1(1), [1](#)

DOI: 10.1163/26670127-01010003.

1 Problem Addressed

Despite their importance in various scientific fields, replication studies are less frequently conducted in the social sciences. In particular, replication research is not yet a well-established type of study in mathematics education research. There are several reasons for this, including the “lack of a generally agreed-on conceptualization of replication studies that would guide the field’s understanding of what replication studies are, what they are meant to do, and why the field should engage in them” (Cai et al. 2018, p. 3). This paper addresses the problem of conceptualizing replication studies in mathematics education research.

2 What Is Achieved?

The paper offers two theoretical contributions. First, it problematizes the notion of *conceptual replication*, which is a key idea in the field of replication studies in the social sciences at large. It is argued that this category of replication study has been interpreted too broadly in the field of mathematics education, and that there seems to be confusion about how different the methods of a conceptual replication can be from the original study to still be considered a replication. Second, this paper proposes a conceptual distinction between a *replication* study and a *follow-up* study. A replication study requires that we maintain most of the original study’s methodological features to enable a comparison of the original and the replicated study. A follow-up study, however, is freed from the constraints of methodological comparability with the original study. In a follow-up study, researchers are trying to discover new results from a new study that has been informed by prior work.

These theoretical developments contribute to the clarification of what counts as a conceptual replication in mathematics education research, and how much the research design of a conceptual replication might deviate from the original study to continue to be considered a conceptual replication.

3 Implications and Significance

The significance of this theoretical paper lies in its contribution to the conceptualization of replication studies in mathematics education. What counts as a replication study remains an open discussion in the field of mathematics education, and this paper contributes to enriching this discussion by proposing novel conceptualizations of the key notions of conceptual replications and follow-up studies.

Additionally, the paper considers what it might take for the field of mathematics education to become a more replication-friendly environment by introducing a distinction between *idea-initiated research* and *results-initiated research*. Idea-initiated research is a common type of investigation that comes into existence because of researchers' curiosity around a set of ideas. In results-initiated work, scholars are driven as much by the results of prior studies as by the ideas explored by them.

This is a paper that promotes the development of replication studies in mathematics education and that contributes to the awareness of the mathematics education research community of the importance of these types of studies for the advancement of this field of study.

Reference

Cai, J., Morris, A., Hohensee, C., Hwang, S., Robison, V. & Hiebert, J. (2018). The role of replication studies in educational research. *Journal for Research in Mathematics Education*, 49(1), 2–8. <https://doi.org/10.5951/jresematheduc.49.1.0002>.