Scaling Up Behavioral Science Interventions in Online Education

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Abstract: Online education is rapidly expanding in response to rising demand for higher and continuing education, but many online students struggle to achieve their educational goals. Several behavioral science interventions have shown promise for aiding students' persistence and completion in a handful of courses. In this study, we tested a set of behavioral interventions over two-and-a-half years, with ¼ million students, from nearly every country, across 247 online courses offered by Harvard, MIT, and Stanford. We hypothesized that the interventions would produced medium-to-large effects, as in the original studies; this was not supported by our results. Instead, our iterative scientific process -- cyclically pre-registering new hypotheses in between waves of data collection -- enabled us to identify individual and contextual conditions under which the interventions can benefit students in developing countries in courses with an achievement gap between students in more and less developed countries. Our findings encourage funding agencies and researchers conducting large-scale field trials to reevaluate study guidelines that emphasize static investigations of average treatment effect over dynamic investigations of contextual heterogeneity.