

Replication Project Investigates Self-Control as Limited Resource

July 29, 2016



A new research replication project, involving 24 labs and over 2100 participants, failed to reproduce findings from a previous study that suggested that self-control is a depletable resource. The findings are published as part of a [Registered Replication Report](#) in *Perspectives on Psychological Science*, a journal of the [Association for Psychological Science](#).

Over the last twenty years, numerous studies have provided evidence supporting the idea that our capacity for self-control is finite – using self-control on one task reduces an individual's ability to exert self-control on a subsequent task. But recent analyses have challenged the strength of this so-called ego depletion effect.

Gaining a clearer understanding of the ego depletion effect is important given that our ability to override impulses is critical to everyday functioning and has been implicated in long-term outcomes related to health, achievement, and well-being.

To investigate the strength of the ego depletion effect, psychological scientists Martin S. Hagger and Nikos L. D. Chatzisarantis of Curtin University in Australia proposed a Registered Replication Report (RRR) in which researchers from multiple labs use the same methods and procedure to conduct independent replications of an experiment.

The particular study used for the RRR was from a 2014 article published in *Psychological Science* by Chandra Sripada, Daniel Kessler, and John Jonides. Computerized tasks were performed in succession to test the ego depletion effect, which meant that the procedure could be standardized and implemented across multiple labs. Hagger and Chatzisarantis developed the protocol for the RRR in close consultation with Sripada and Kessler, using the tasks and procedure from the original study.

A total of 24 labs – from countries including Australia, Belgium, Canada, Indonesia, Sweden, and the United States – completed independent replications with a combined total of 2141 participants. Each lab's implementation plan was vetted by Alex O. Holcombe (University of Sydney), editor of the RRR, to ensure consistency with the protocol.

As in the original study, RRR participants completed a computer task that involved pressing a button when the letter “e” appeared in words presented onscreen. Those who were randomly assigned to the depletion condition were asked to refrain from pressing the button if the “e” was near a vowel; this condition was thought to deplete self-control because it required participants to inhibit a tendency to respond. Participants in the control condition did not have to withhold responses.

Participants then completed a digit task — a set of three digits appeared on screen and participants had to press the number key that corresponded to the digit that differed from the other two. On some trials, the value and position of the target digit were congruent (i.e., 121); in other trials, the value and position were incongruent (i.e., 112).

The original 2014 study showed an ego depletion effect: Participants in the depletion group on the letter “e” task performed worse than those in the control group on the subsequent digit task. But the combined results of the independent replications failed to reproduce this effect.

“Do the current results suggest that the ego-depletion effect does not exist after all? Certainly the current evidence does raise considerable doubts given the close correspondence of the protocol to the standard sequential-task paradigm typically used in the literature, and the tightly-controlled tasks and protocol across multiple laboratories,” Hagger and Chatzisarantis write in their report.

Sripada, Kessler, and Jonides acknowledge that the RRR does not replicate their earlier findings, but urge caution in interpreting the results too broadly. They note that tasks used to measure ego depletion vary considerably across studies and may depend on somewhat different underlying mechanisms.

“Caution is thus required in drawing implications from the results of this RRR for the phenomenon of ego depletion writ large,” they write in a commentary accompanying the RRR.

In a separate commentary, psychological scientists Roy F. Baumeister (University of Florida) and Kathleen D. Vohs (University of Minnesota), who have conducted several studies investigating self-control as a limited resource, question whether the procedure used in the original study and subsequent RRR effectively target the psychological processes thought to be involved in ego depletion.

Hagger and Chatzisarantis agree that further research is needed to draw broader conclusions about the ego depletion effect:

“[T]he current replication provides an important source of data with regard to the effect given it is based on a preregistered design with data from multiple labs, but we recognize it is only one source,” Hagger and Chatzisarantis write. “We have outlined possible avenues as to how the research community can move the field forward in providing additional data for the depletion effect and exploring the possibility of converging evidence from multiple replication efforts across different depletion domains.”

The complete RRR and accompanying commentaries are available to the public online:

[Introduction to a Registered Replication Report on Ego Depletion](#)

Alex O. Holcombe

[A Multilab Preregistered Replication of the Ego-Depletion Effect](#)

Martin S. Hagger and Nikos L. D. Chatzisarantis

[Misguided Effort With Elusive Implications](#)

Roy F. Baumeister and Kathleen D. Vohs

[Sifting Signal From Noise With Replication Science](#)

Chandra Sripada, Daniel Kessler, and John Jonides