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Cognitive enhancement: toward the integration of theory and practice

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Cover Note to “Cognitive Enhancement: Toward the integration of theory and practice” (2024)

Leiden, October 2024

My dissertation “Cognitive Enhancement: Toward the integration of theory and practice” was accepted and defended successfully in 2016. On page 13 of the original dissertation, I wrote: “This dissertation supports the mission of the Center for Open Science (COS) to increase openness, integrity, and reproducibility of scientific research”. I (still) firmly believe openness is fundamental to scientific progress, as such I write this cover note to accompany important updates to this dissertation.

First, you will now see “retracted” printed over the pages of Chapter 1 “Transcutaneous vagus nerve stimulation (tVNS) enhances response selection during action cascading processes” and Chapter 5 “γ-aminobutyric acid (GABA) administration improves action selection processes: a randomized controlled trial”. The reason for this is the retraction of the articles that served as the basis for these chapters[1,2]; the data reported in both papers, and thus chapters, have been subject to misconduct; participants have been omitted from the data, changing the results of these studies. Hence, conclusions from these chapters cannot reliably be drawn. Second, although no visible changes are made to Chapter 3 “”Unfocus” on foc.us: Commercial tDCS headset impairs working memory”, I would like to point out an issue of concern published by *Experimental Brain Research* in 2022[3]; the conclusions of this article, and thus Chapter 3, should be read with caution.

I fully endorse these conclusions and actions. In fact, these are what I hoped for when, in December 2018, two colleagues and I filed internal concerns on what we had perceived as irregularities in academic integrity relating to work I did in the context of my dissertation. We hoped to protect future students and staff, and to help the university and academia in their efforts to self-correct. Now I hope the current cover note may serve to signal such correction is possible.

After formal complaint and investigation, the Research Integrity Committee of Leiden University and the Landelijk Orgaan Wetenschappelijke Integriteit concluded a number of research integrity breaches that led to a follow-up investigation of 53 more articles and subsequent retraction of and/or issuing concern regarding, amongst others, the papers mentioned above[4,5,6]. This means all articles fundamental to the chapters in this dissertation have been extensively investigated; no irregularities other than the ones mentioned above could be concluded concerning this dissertation.

The chapters associated to misconduct in this dissertation are neither deleted nor corrected, instead flagged to create openness. Covering up wrongdoing, mistakes, and failures, we may never learn how to correct and/or do better. The opportunity to update my dissertation as such leaves me hopeful; standing up against malpractice and correcting what was done wrong is possible. And perhaps the only way to build a sustainable scientific future.

Laura Steenbergen

[1] doi: 10.1016/j.euroneuro.2015.03.015
[2] doi: 10.1038/s41598-022-13116-1
[3] doi: 10.1007/s00221-022-06418-3
[4] advies-cwi-2019-01-geanonimiseerd-engels-edit-def-004.pdf (universiteitleiden.nl)
[5] 277-definitief-advies-cwi-20-02_eng_redacted.pdf (universiteitleiden.nl)
[6] supplementary-decision-cwi-20-02-c2b_en_redacted.pdf (universiteitleiden.nl)