A first set of research guidelines for the field of neurofeedback

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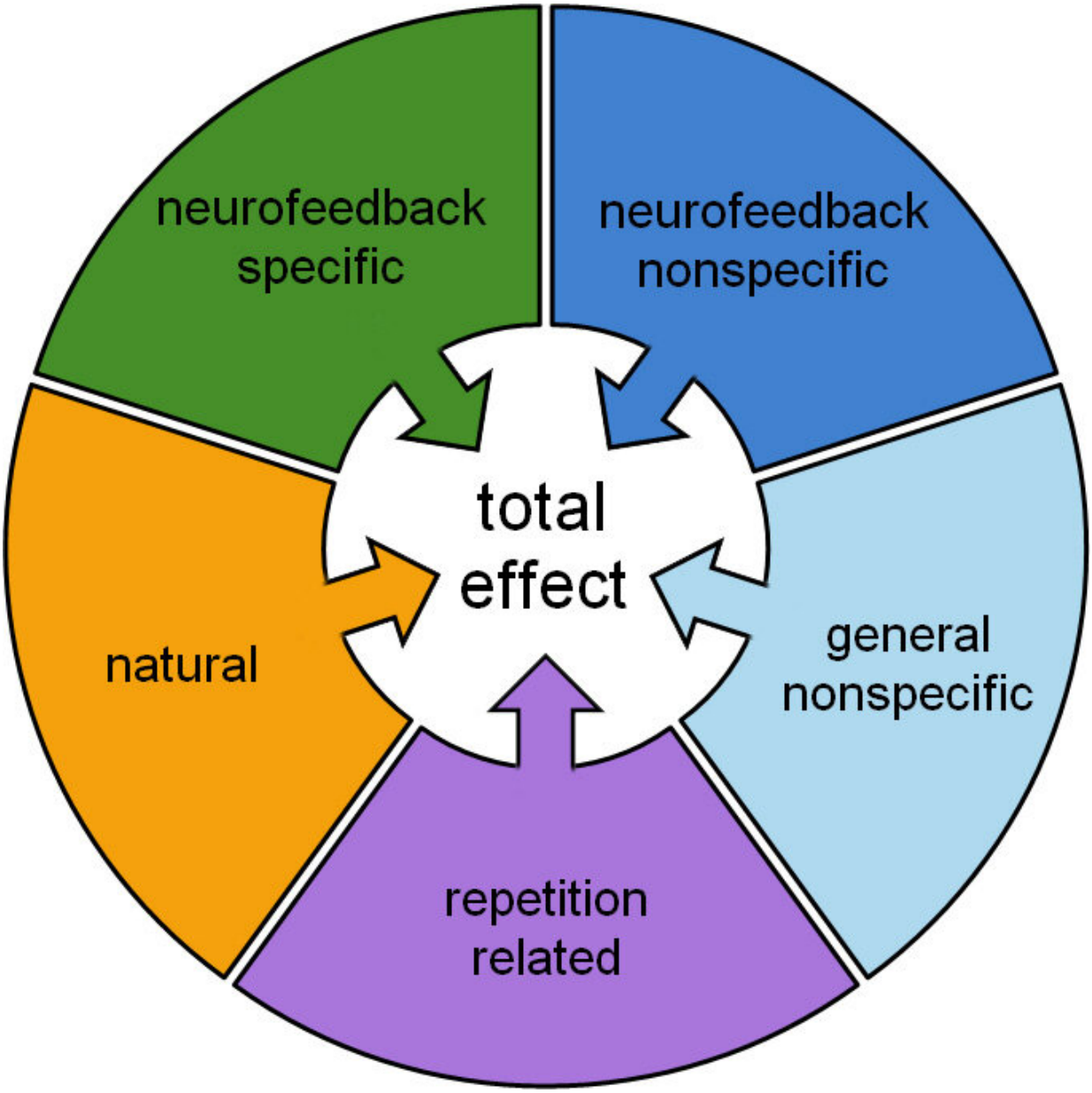

A first set of research guidelines for the field of neurofeedback. Credit: McGill University

The procedure known as neurofeedback records brain activity and presents it back to participants in real-time. With this information, individuals attempt to modulate their brain activity and, in turn, to self-regulate their mental state. There are thousands of active neurofeedback practitioners and hundreds of scientific publications are published on the topic each year. However, in recent years a controversy has erupted surrounding whether neurofeedback can be used to effectively treat patients and whether the relevant benefits stem from biomedical processes or through placebo mechanisms alone. Exacerbating the issue, there exists no commonly agreed upon research standards for the field.

A new paper uploaded to *PsyArXiv* on January 23 looks to address the latter issue, proposing, for the first time, a set of research guidelines for the field of neurofeedback. The culmination of a collaboration between 80 authors from institutions across Europe, the UK, the US, and Canada, the paper, "Consensus on the reporting and experimental design of clinical and cognitive-behavioural neurofeedback studies (CRED-nf checklist)," provides a feasible set of standards for experimental design and reporting that the authors say both leading neurofeedback advocates and skeptics agree will help provide answers to their debate.

An emerging field in need of guidelines

"When I began researching neurofeedback six years ago, I truly believed that this technique presented a medical breakthrough that would help those suffering from mental conditions," explains Robert Thibault, Ph.D. candidate in the Cognitive Neuroscience Laboratory at McGill University's Faculty of Medicine and one of the architects of the

guidelines. "After conducting systematic reviews on neurofeedback, attending relevant conferences, and integrating deeply into this research community, I discovered that (1) many neurofeedback studies are inadequately designed compared to clinical research standards, and (2) that most neurofeedback researchers are well aware of this issue."

Thibault then reached out to researchers from across the neurofeedback community in an attempt to bring them together to draft a set of guidelines that could move the field forward. The resulting guidelines are presented in the form of a one-page checklist divided into essential and encouraged items in all facets of experiment design, from pre-experiment to data storage. While some may balk at the bureaucratic implications of a checklist, Thibault notes that the benefits of standardization will outweigh the nominal time commitment required to adhere to the checklist. "The guidelines are meant to help researchers conduct robust studies that are well designed to answer questions in the field and to report their results in such a way that other researchers can build upon them and meta-analyze them."

"I was particularly surprised at how well scientists with opposing views worked together to produce this paper," notes Thibault. "When reading scientific literature, it can appear that some scientists are at opposing ends of a spectrum. However, when we brought them together to craft this checklist, they could largely agree on how to move forward effectively." Considering the intention to evolve the checklist in-tune with the field's evolution, this collaborative spirit certainly bodes well.

More information: Tomas Ros et al. Consensus on the reporting and experimental design of clinical and cognitive-behavioural neurofeedback studies (CRED-nf checklist), (2019). DOI: 10.31234/osf.io/nyx84