



HAL
open science

An online tool to facilitate the assessment of BCI acceptability

Léa Pillette, Elise Grevet, Claire Dussard, Franck Amadiou, David Gasq, Emeline Pierrieau, Jacques Py, Hakim Si-Mohammed, Nathalie George, Camille Jeunet-Kelway

► To cite this version:

Léa Pillette, Elise Grevet, Claire Dussard, Franck Amadiou, David Gasq, et al.. An online tool to facilitate the assessment of BCI acceptability. BCI 2023 - 10th International BCI Meeting Balancing Innovation and Translation, Jun 2023, Bruxelles, Belgium. pp.1-1. hal-04289425

HAL Id: hal-04289425

<https://hal.science/hal-04289425>

Submitted on 16 Nov 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

An online tool to facilitate the assessment of BCI acceptability

L. Pillette^{1*}, E. Grevet², C. Dussard³, F. Amadiou⁴, D. Gasq⁵, E. Pierrieau², J. Py⁶,
H. Si-Mohammed⁷, N. George³, C. Jeunet²

¹Univ Rennes, Inria, CNRS, IRISA, Rennes, France; ²Univ. Bordeaux, CNRS, EPHE, INCIA, Bordeaux, France;

³Institut du Cerveau et de la Moelle Epinière, ICM, CNRS / Inserm / Sorbonne Université, Paris, France ; ⁴CNRS, Univ. Toulouse 2, France; ⁵INSERM, Univ. Toulouse 3, France;

⁶Univ. Toulouse Jean Jaurès, France; ⁷Univ. Lille, CNRS, Central Lille, CRIStAL, France

* IRISA, Rennes, France. E-mail: lea.pillette@irisa.fr

Introduction: The acceptability of a technology corresponds to the explicit willingness of potential users to use said technology before having tried it [1]. Assessing the acceptability of new technologies provides valuable insights regarding people's expectations and how to favour technology adoption. Our systematic review of the literature reveals that only four articles report assessments of BCI or neurofeedback (NF) acceptability that are based on validated questionnaire or model [2]. We hypothesise that the lack of studies on this subject is, at least in part, due to the absence of acceptability models and questionnaires that are specific to BCIs/NF. Thus, we propose an online tool - <https://bci-acceptability-tool.cnrs.fr/> - (see Fig. 1) that aims at providing BCI and NF researchers with an adapted questionnaire to evaluate the acceptability of their device.

Material, Methods and Results: We based our tool on the 3rd version of the technology acceptance model [3] and the 2nd version of the unified theory of acceptance and use of technology [4] as they are the most widespread and result from many studies on different technologies. As those models are generic, they do not enable accounting for all the determinants of BCI acceptability. Therefore, we designed a new model including new determinants that should be considered to assess BCI acceptability, e.g., temporal behavioral intention takes into account the duration of the BCI use. This model is very detailed in order to be applicable to the majority of contexts of BCI use. Nevertheless, it is flexible and adapted to different use cases. Indeed, based on the answers provided by the users on the online form, the tool enables them to download a questionnaire that is context adapted.

Discussion: The model developed has been validated and specified for post-stroke motor rehabilitation through a large-scale study involving 753 persons without motor disabilities [5]. We plan to improve the tool by adapting the factors to assess depending on each context of use with the results of future acceptability studies, which it will foster and allow carrying out in a reproducible and reliable manner.

Significance: Using the free, online tool that we propose, researchers can download a BCI-oriented acceptability questionnaire adapted to their context of use.

References:

- [1] Alexandre, B., Reynaud, E., Osiurak, F., & Navarro, J. (2018). Acceptance and acceptability criteria: a literature review. *Cognition, Technology & Work*, 20(2), 165-177.
- [2] Pillette, L., Grevet, E., Dussard, C., Amadiou, F., Gasq, D., Pierrieau, E., ... & Jeunet, C. (2022, March). Are Brain-Computer Interfaces and Neurofeedback acceptable?. In *CORTICO 2022*.
- [3] Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Dec. sci.*, 39(2), 273-315.
- [4] Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178.
- [5] Grevet, E., Forge, K., Tadiello, S., Izac, M., Amadiou, F., Brunel, L., ... & Jeunet, C. (2022). Modelling the acceptability of BCIs for motor rehabilitation after stroke: a large scale study on the general public.

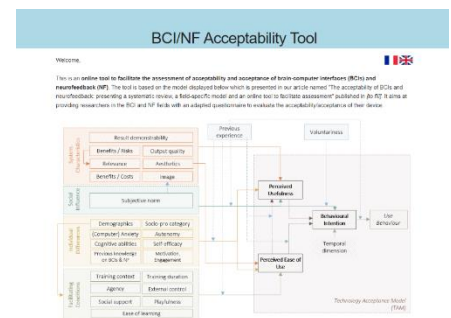


Figure 1. Screenshot of our online tool.