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Throughout MI-BCI studies, human supervision plays a central role [7]. While providing emotional and social feedback [5], experimenters present the technology to users and ensure their smooth progress with BCI use. Though, very little is known about the influence experimenters might have on the obtained results. Literature from different fields such as ethics and business [3], social research [6] or economic research [9] indicate an effect of experimenters, and specifically their gender, on experimental outcome. Such an effect was recently suggested in neurofeedback training [8]. Yet, it had never been tested in BCI.

We investigated the potential influence of the experimenters' gender depending on the participants' gender on MI-BCI performances and progress, i.e., the evolution of performances. Six experimenters (3 men / 3 women) trained 59 randomly assigned healthy MI-BCI naïve participants they did not know (30 men / 29 women) during one MI-BCI session (following the Graz protocol [4]) during which they had to learn to perform two MI-tasks, i.e., imagine right or left hand movements.

Our results suggest that, overall, women experimenters seem to influence positively participants' performances compared to men experimenters, more precisely they seem to induce better Quality-Weighted Accuracy performance (a metric considering the classifier output that participants were instructed to improve, inspired by the SensoriMotorRhythm quality score [1]) for both men and women participants.

Further analysis are needed regarding other variables that might influence or provide insights on our results, e.g. traits, state, experimenters' teaching competence, subjects' motivation or quantity and quality of interaction between participants and experimenters. There might also be other analysis to perform based on different performance metrics reflecting user performances independently of the classifier output [2]. Taking experimenter-related factors into account might lead to a conjoint progress of the global BCI performance and the validity and understanding of BCI experimental results.

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