

The Effect of Transcranial Direct Current Stimulation (tDCS) on Mood and Emotional Self-Regulation in Individuals with Generalized Anxiety Disorder

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E d i t o r	R e v i e w e r s
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1. Round 1

1.1. Reviewer 1

Reviewer:

The introduction discusses the neurobiology of anxiety but does not adequately justify why tDCS was chosen over other interventions such as transcranial magnetic stimulation (TMS) or cognitive behavioral therapy (CBT). Adding a comparative discussion with citations would improve the rationale.

tDCS Electrode Placement Justification – The article states, “the cathodal electrode was placed at 4F, and the anodal electrode was placed at 3F.” It would be beneficial to cite prior research justifying why this placement was selected for modulating mood and emotional self-regulation.

Measures Section Lacks Reliability and Validity Information – The Pennsylvania Anxiety Scale, PANAS, and Emotion Regulation Questionnaire are described, but their reliability (Cronbach’s alpha) and validity for this specific population are not provided. Reporting these values would improve the study’s credibility.

Lack of Power Analysis – The study states that the sample size was determined using G-power software, but does not specify the effect size assumption (e.g., Cohen’s f or η^2) used. Including this would allow readers to assess whether the study was adequately powered.

Lack of Baseline Group Comparisons – The study presents means and standard deviations for pre-test values but does not state whether baseline comparisons between groups were statistically analyzed (e.g., using independent t-tests or ANOVA). If such tests were conducted, the results should be reported.

Misinterpretation of Non-Significant Results – In the discussion of adaptive emotion regulation, the article states that there was a “trend towards significance ($p = 0.071$).” However, p-values above 0.05 should not be interpreted as trends unless a pre-specified threshold (e.g., $p < 0.10$) was justified in the methods.

Response: Revised and uploaded the manuscript.

1.2. Reviewer 2

Reviewer:

The introduction presents prior studies but does not explicitly state what research gap this study is addressing. A sentence explicitly stating what previous studies have not covered would improve the clarity of the study’s contribution.

Overgeneralization in Epidemiology – The statement, “Globally, GAD accounts for more than 50% of anxiety disorders in primary care centers (Hood et al., 2024),” is quite broad. Specifying whether this is based on prevalence rates, clinical diagnoses, or self-report surveys would add accuracy.

The study recruited participants from a single clinic in Tehran. This limits generalizability. The authors should acknowledge this limitation explicitly in the discussion or suggest future studies involving multi-center recruitment.

The article states that participants were “randomly divided into three groups (13 per group) using Excel software.” However, it is not clear whether simple randomization or block randomization was used. This should be specified to ensure methodological transparency.

The control group received no intervention. This weakens causal inferences, as placebo effects are unaccounted for. Consideration of a sham-control group (e.g., placing electrodes but not administering current) would strengthen internal validity.

Missing Confidence Intervals in ANOVA Results – While p-values are reported, confidence intervals for mean differences in Table 3 would provide a better understanding of the precision of the estimates.

Overstatement of Findings – The discussion claims that “tDCS is an effective intervention for enhancing mood and emotional self-regulation.” However, given the small sample size and the lack of an active control, this claim should be tempered by acknowledging that further replication is needed.

Lack of Alternative Explanations – The discussion does not consider alternative explanations for the results, such as expectancy effects or spontaneous remission of symptoms. Addressing these limitations would strengthen the interpretation.

Response: Revised and uploaded the manuscript.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.