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Effectiveness of Transcranial Direct Current Stimulation (tDCS) in Reducing Anxiety and Aggression in 6- to 10-Year-Old Boys With High-Functioning Autism Spectrum Disorder

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1. Round 1

1.1. Reviewer 1

Reviewer:

In the Data Collection Tools section, the description of the ASC-ASD-P appropriately reports previous reliability coefficients, but the manuscript states that “Internal consistency of the scale was additionally evaluated in the present sample using Cronbach's alpha” without subsequently reporting that coefficient in the Findings section. The same problem applies to the C-SHARP. The authors should report the reliability estimates obtained in the current sample for both total scores, preferably at baseline, and should consider omega coefficients if feasible given the multidimensional nature of the measures. Reporting only reliability coefficients from previous validation studies is not sufficient to establish score reliability in the present dataset.

The use of parent-reported anxiety and aggression as the sole clinical outcomes should be more critically addressed. In the intervention protocol, the manuscript states that “Children and their parents were not informed whether active or sham stimulation was being administered,” but parents also served as raters of both dependent variables. The authors should explain how blinding was maintained, whether parents were physically present during stimulation sessions, whether they could infer allocation from their child's sensations or perceived improvement, and whether blinding success was formally assessed. Given

that expectancy effects could directly influence parent-rated outcomes, this issue is particularly important for interpreting the treatment effect.

In the Findings section, the demographic paragraph should avoid unsupported claims such as “no notable demographic imbalance was evident that would be expected to systematically account for subsequent differences in the primary outcomes.” Descriptive similarity alone does not establish statistical equivalence. The authors should either provide appropriate baseline comparisons for relevant demographic and clinical characteristics or phrase the statement more cautiously. More importantly, baseline clinical variables such as ASD severity, IQ, medication status, baseline anxiety severity, baseline aggression severity, and previous interventions should be reported because these factors are more clinically relevant than parental occupation when assessing comparability between treatment groups.

Table 1 reveals very large reductions in aggression in the tDCS group, from 83.20 at baseline to 57.60 at posttest and 55.20 at follow-up, yet the Bonferroni mean differences reported later for aggression are only 0.899, 0.345, and 0.720. These values are mathematically inconsistent with the descriptive means and strongly suggest either a transcription error, use of a transformed score that was not described, or incorrect reporting of the post-hoc analysis. The authors must return to the original statistical output, verify all aggression pairwise-comparison values, and ensure that Table 1, Table 3, the ANOVA results, and the narrative interpretation all refer to the same scoring metric.

Response: Revised and uploaded the manuscript.

1.2. Reviewer 2

Reviewer:

The tDCS intervention protocol requires considerably greater technical precision to ensure replicability. The sentence “The anodal, active electrode was positioned over the left DLPFC in accordance with the international 10–20 electroencephalography positioning system, while the reference cathodal electrode was placed at the corresponding reference location specified by the stimulation protocol” does not identify the actual electrode positions. The authors should specify the exact EEG coordinates, for example F3 for the anode and the precise cathodal location; electrode dimensions and surface area; electrode material; current density; ramp-up and ramp-down durations; device manufacturer and model; impedance threshold; saline concentration or preparation method; and whether electrode placement was identical across all sessions.

The intervention dosage should be clarified because the manuscript states that treatment was administered “three times per week over four weeks” but also that there were “10 sessions.” Three sessions per week for four weeks ordinarily implies 12 sessions. The authors should provide the exact treatment schedule, including the number of sessions in each week, intersession intervals, whether sessions occurred on consecutive days, and whether any missed sessions were rescheduled. This information is important because the cumulative effects of tDCS are potentially dependent on session spacing and total stimulation exposure.

The sham procedure described as stimulation that “was discontinued after approximately 30 seconds” should be more carefully justified. The authors should state whether the current was ramped up and down in the sham condition, whether the sham function was automated by the device or manually controlled by the researcher, and whether the intervention administrator was blinded to condition. If the administrator knew allocation, the study should be described as participant- and parent-blinded rather than double-blind. The manuscript should also explain whether adverse sensations differed between groups and whether any assessment of treatment-condition guessing was performed.

The manuscript requires a dedicated ethical considerations paragraph. Although informed consent is mentioned, essential information is absent, including the name of the approving institutional ethics committee, ethics approval number, trial registration if applicable, procedures for obtaining child assent in developmentally appropriate form, criteria for terminating stimulation because of adverse events, and the mechanism for reporting serious adverse events. Given that the intervention involves noninvasive brain stimulation in children aged 6–10 years, detailed ethical and safety reporting is essential.

Response: Revised and uploaded the manuscript.

2. Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.