




Comparing the Effectiveness of Cognitive Empowerment Based on Cognitive Games and Executive Function–Based Parenting on Working Memory in Children with Executive Function Deficits

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1. Round 1

1.1. Reviewer 1

Reviewer:

In the paragraph discussing neurodevelopmental disorders, the manuscript states that executive function deficits are common in ADHD, dyslexia, autism spectrum disorder, and learning disorders. However, the study sample consists of children with executive function deficits rather than children with specific diagnoses. The authors should clarify whether participants represented a diagnostically heterogeneous group and discuss how this heterogeneity may have influenced intervention responsiveness and outcome variability.

The statement “working memory, often considered the central component of executive functioning” requires greater conceptual precision. Different theoretical models conceptualize executive functions differently. The authors should clarify which executive function framework guided the study and explain whether working memory was considered an outcome variable, a core executive function, or a proxy indicator of broader executive functioning.

The literature review presents substantial evidence supporting cognitive game interventions and executive function–based parenting separately; however, the specific theoretical mechanism through which these interventions were expected to affect working memory is not sufficiently articulated. A conceptual model or explanatory framework linking intervention activities to cognitive processes would strengthen the study’s theoretical foundation.

The manuscript interprets the non-significant difference between the two intervention groups as evidence that the interventions are equally effective. Statistically, a non-significant difference does not demonstrate equivalence. To support claims of comparable effectiveness, equivalence testing or non-inferiority analyses would be more appropriate. The authors should revise this interpretation accordingly.

In the discussion section, the authors repeatedly attribute improvements in working memory to neuroplasticity and cognitive strengthening mechanisms. While these explanations are plausible, no direct neurocognitive measures were collected. Therefore, such claims should be presented more cautiously as theoretical interpretations rather than empirically demonstrated mechanisms.

Authors revised and uploaded the document.

1.2. Reviewer 2

Reviewer:

The sample size calculation section reports that G*Power was used with $\alpha = .05$, power = .80, and effect size = .25. However, the manuscript does not specify the statistical model on which this calculation was based. The authors should indicate whether the estimate was derived from repeated-measures ANOVA, mixed-design ANOVA, ANCOVA, or another analytical framework and provide the expected number of measurements used in the calculation.

The participant recruitment procedure requires clarification. In the paragraph stating that “60 mothers of children identified by specialists as having neurodevelopmental disorders were selected,” it appears that diagnosis was initially based on professional judgment rather than standardized assessment. The authors should explain the exact screening pathway, including who conducted evaluations, what instruments were used, and whether diagnostic decisions were independently verified.

The inclusion criterion “executive function deficits according to DSM-5 diagnostic criteria” is conceptually problematic because DSM-5 does not define executive function deficits as a standalone diagnosis. The authors should revise this wording and specify the operational criteria used to identify executive function impairment, including cutoff scores, clinical assessments, or screening instruments.

The intervention description for the cognitive empowerment group is insufficiently detailed for replication. Although the manuscript describes the Captain’s Log software generally, it remains unclear which specific training modules were selected, how much time was allocated to each cognitive domain, and whether intervention fidelity was monitored. More detailed procedural information should be provided.

Similarly, the parenting intervention section presents session objectives but does not explain how treatment adherence was evaluated. The authors should report whether attendance rates, homework completion, parental engagement measures, or fidelity checklists were used to ensure consistent implementation of the parenting protocol across participants.

The rationale for selecting working memory as the sole primary outcome requires stronger justification. Given that both interventions targeted broader executive processes such as attention, inhibition, and self-regulation, it would be useful to explain why no additional executive function outcomes were assessed despite the multidimensional nature of the interventions.

The assumptions-testing section reports Shapiro–Wilk statistics but labels them as “normality statistics” without clarifying whether these values represent *W* coefficients or another statistic. The authors should present assumption-testing results using standard reporting conventions and explain how violations, if any, would have been addressed.

The manuscript reports a significant Mauchly’s test of sphericity ($p = .001$), indicating that the sphericity assumption was violated. However, the subsequent ANOVA table does not specify whether Greenhouse–Geisser, Huynh–Feldt, or lower-bound

corrections were applied. This omission raises concerns regarding the validity of the reported F statistics and should be addressed explicitly.

The repeated-measures ANOVA table reports a main effect of group with $SS = 563.10$ and $F = 8.04$, but the source of this between-group effect is not fully explained. The authors should clarify whether baseline differences were controlled and discuss whether a mixed-model approach might have been more appropriate given the longitudinal design.

Authors revised and uploaded the document.

2. Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.