

Neuropsychology and Therapeutic Techniques: Influence on Patients with Mood Disorders

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Article Info

Received: September 08, 2024

Revised: November 10, 2024

Accepted: January 04, 2025

Online Version: April 28, 2025

Abstract

Mood disorders, including depression and bipolar disorder, are pervasive mental health conditions that significantly impair emotional regulation, cognitive functioning, and daily life. Advances in neuropsychology have provided valuable insights into the neural mechanisms underlying mood disorders, yet their integration into therapeutic interventions remains underexplored. This study investigates the influence of neuropsychological principles on the effectiveness of therapeutic techniques in managing mood disorders. The research aimed to evaluate the impact of neuropsychology-informed therapeutic techniques on emotional regulation, cognitive performance, and symptom severity in patients with mood disorders. A mixed-methods approach was employed, combining a randomized controlled trial (RCT) with qualitative interviews. The study involved 120 participants diagnosed with mood disorders, divided into intervention and control groups. The intervention group received a 10-week program integrating cognitive-behavioral therapy (CBT), mindfulness-based techniques, and neurofeedback training, while the control group received standard care. Findings revealed significant improvements in emotional regulation and cognitive functioning among the intervention group compared to the control group ($p < 0.01$). Participants in the intervention group also reported reduced symptom severity and increased resilience.

Keywords: Cognitive-Behavioral, Therapeutic Techniques, Mood Disorders



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Journal Homepage

<https://research.adra.ac.id/index.php/rpoc>

ISSN: (P: [3048-0078](https://doi.org/10.70177/rpoc.v2i2.1860)) - (E: [3048-1937](https://doi.org/10.70177/rpoc.v2i2.1860))

How to cite:

Rohmatillah, N., Putri, A. A., Susilo, B. C & Ermawan, B. (2025). Neuropsychology and Therapeutic Techniques: Influence on Patients with Mood Disorders. *Research Psychologie, Orientation et Conseil*, 2(2), 68–77.
<https://doi.org/10.70177/rpoc.v2i2.1860>

Published by:

Yayasan Adra Karima Hubbi

INTRODUCTION

Mood disorders, including depression and bipolar disorder, are among the most prevalent and debilitating mental health conditions globally (Ahmed et al., 2020). These disorders are characterized by persistent disturbances in mood, emotional regulation, and cognitive functioning, which significantly impair individuals' quality of life and ability to engage in daily activities. Advances in neuropsychology have provided valuable insights into the neural and cognitive mechanisms underlying mood disorders (Firth et al., 2020). Studies have identified structural and functional abnormalities in brain regions such as the prefrontal cortex, amygdala, and hippocampus, as well as dysregulation in neurotransmitter systems. Despite these advances, therapeutic interventions often fail to incorporate these neuropsychological insights effectively, leaving a gap between research findings and clinical practice (Prime et al., 2020). This disconnect highlights the need for innovative approaches that integrate neuropsychological principles into therapeutic techniques to address the complex nature of mood disorders.

The persistence of high relapse rates and limited treatment efficacy in mood disorders underscores the inadequacy of current therapeutic approaches (Rajkumar, 2020). Standard methods such as pharmacological interventions and traditional cognitive-behavioral therapy (CBT) often target symptoms rather than addressing the underlying neuropsychological factors. Patients with mood disorders frequently report residual symptoms, including cognitive deficits and emotional dysregulation, even after receiving standard treatments (Roy et al., 2020). This indicates the need for therapies that not only alleviate symptoms but also enhance patients' cognitive and emotional functioning. Furthermore, the heterogeneity of mood disorders poses additional challenges, as treatments must be tailored to the specific needs and neuropsychological profiles of individual patients (Sibley et al., 2020). These issues demand a paradigm shift toward integrative, interdisciplinary approaches that bridge neuropsychological research and therapeutic practices.

This study aims to evaluate the influence of neuropsychology-informed therapeutic techniques on patients with mood disorders ("2020 Alzheimer's Disease Facts and Figures," 2020). Specifically, the research seeks to determine whether the integration of cognitive-behavioral therapy (CBT), mindfulness-based practices, and neurofeedback training can improve emotional regulation, cognitive performance, and symptom severity ("<span Style="font-Variant," 2021). The study also aims to assess the acceptability and feasibility of these techniques in clinical settings, providing a comprehensive analysis of their potential as innovative treatments for mood disorders ("2022 Alzheimer's Disease Facts and Figures," 2022). By addressing these objectives, the research aspires to contribute to the growing body of evidence supporting the integration of neuropsychological insights into mental health interventions, with the ultimate goal of improving clinical outcomes and enhancing patients' quality of life.

Existing literature reveals significant gaps in the treatment of mood disorders, particularly in the application of neuropsychological principles to therapeutic techniques ("2023 Alzheimer's Disease Facts and Figures," 2023a). While numerous studies have explored the neural mechanisms of mood disorders, few have translated these findings into practical interventions. Traditional therapeutic approaches often overlook the role of cognitive deficits, such as impaired executive functioning and memory, in maintaining mood disorders (Authors/Task Force Members: et al., 2022). Additionally, although mindfulness-based

interventions and neurofeedback have shown promise in improving emotional regulation, their combined application remains underexplored. This fragmentation in the literature highlights the need for comprehensive models that integrate cognitive, emotional, and neural dimensions into therapeutic frameworks (Byrne et al., 2023). The current study seeks to fill this gap by systematically evaluating the efficacy of an integrative intervention that incorporates neuropsychological principles.

The novelty of this research lies in its interdisciplinary approach to treating mood disorders (Caly et al., 2020). Unlike conventional therapies that focus primarily on symptom management, this study combines cognitive-behavioral techniques, mindfulness practices, and neurofeedback training to address the cognitive, emotional, and neural dimensions of mood disorders comprehensively (Clerkin et al., 2020). This integrative framework offers a new perspective on how therapeutic interventions can be tailored to the neuropsychological profiles of individual patients. The findings of this research have the potential to advance theoretical understanding, inform clinical practices, and reshape therapeutic paradigms in mental health (Cosentino et al., 2020). By bridging the gap between neuropsychological research and therapeutic applications, this study provides a significant contribution to the field of mental health, emphasizing the importance of interdisciplinary collaboration and innovation in addressing complex psychiatric conditions.

This research is justified not only by the pressing need for more effective treatments but also by its potential to establish a scalable model for integrative therapy (Dai et al., 2020). The interdisciplinary nature of the study reflects the growing recognition that addressing mood disorders requires a holistic approach that considers the interplay between cognitive processes, emotional regulation, and neural functioning (De Oliveira et al., 2020). The integration of neuropsychological principles into therapeutic techniques offers a promising path forward, with implications for both clinical practice and future research (Döhner et al., 2022). These contributions underscore the relevance and significance of the study, affirming its potential to influence the broader field of mental health and improve outcomes for individuals with mood disorders.

RESEARCH METHOD

This study explores the implementation of neuropsychology-informed therapeutic interventions in the treatment of mood disorders through a mixed-methods approach that integrates both quantitative and qualitative perspectives. Such an approach is considered essential for obtaining a comprehensive evaluation of clinical outcomes and patient-centered experiences, particularly in complex psychiatric conditions such as major depressive disorder and bipolar disorder (Evans et al., 2021). By combining measurable clinical indicators with subjective experiential data, this research seeks to develop a more holistic understanding of therapeutic effectiveness within mental health care settings.

Research Design

The study employed a mixed-methods research design that integrates a randomized controlled trial (RCT) with a qualitative descriptive framework. The quantitative component was designed to assess the effectiveness of neuropsychology-based therapeutic interventions in reducing mood disorder symptoms, while the qualitative component aimed to capture participants' lived experiences through semi-structured interviews. This methodological

integration enables data triangulation, thereby enhancing the credibility and depth of the findings by combining statistical evidence with narrative insights.

Research Target/Subject

The participants of this study were individuals clinically diagnosed with mood disorders, specifically major depressive disorder and bipolar disorder, recruited from outpatient psychiatric clinics. A total of 120 participants were selected through purposive sampling based on predefined inclusion criteria, including confirmed diagnosis, clinical stability, and voluntary consent to participate (Giaquinto et al., 2022). Subsequently, participants were randomly assigned into two groups: an intervention group receiving neuropsychology-informed therapy (n = 60) and a control group receiving standard psychiatric treatment (n = 60).

Research Procedure

The research procedure began with participant screening and informed consent acquisition to ensure ethical compliance (Miller et al., 2022). Baseline assessments were conducted prior to intervention to establish initial psychological and cognitive conditions. The intervention group participated in a structured 12-week therapeutic program incorporating cognitive-behavioral therapy, mindfulness-based training, and weekly neurofeedback sessions lasting 90 minutes, while the control group continued receiving routine psychiatric care, including medication management and standard counseling services (Rawson et al., 2020). Post-intervention assessments were then conducted, followed by qualitative interviews with selected intervention participants to explore subjective therapeutic experiences.

Instruments and Data Collection Techniques

Were collected using standardized psychometric tools and semi-structured interview guides. Depressive symptoms were assessed using the Hamilton Depression Rating Scale (HDRS), while manic symptoms were measured through the Young Mania Rating Scale (YMRS). Cognitive performance was evaluated using the Montreal Cognitive Assessment (MoCA), and emotional regulation difficulties were measured with the Difficulties in Emotion Regulation Scale (DERS) (Lyon et al., 2022). In addition, qualitative data were obtained through semi-structured interviews designed to explore participants' perceptions of psychological change and therapeutic progress throughout the intervention period.

Data Analysis Technique

Data analysis was conducted using a mixed-methods analytical framework that integrates both statistical and thematic approaches. Quantitative data were analyzed using comparative statistical techniques to examine differences between pre-test and post-test scores across intervention and control groups. In contrast, qualitative data from interviews were analyzed using thematic analysis to identify recurring patterns related to emotional experiences and perceived therapeutic outcomes. The integration of both datasets enabled methodological triangulation, thereby providing a more robust and comprehensive interpretation of the intervention's effectiveness and its psychological impact.

RESULTS AND DISCUSSION

Descriptive statistics revealed significant improvements in the intervention group across all measured outcomes. The Hamilton Depression Rating Scale (HDRS) scores decreased from a baseline mean of 18.4 (SD = 3.2) to 9.6 (SD = 2.8), while the Young Mania Rating Scale (YMRS) scores dropped from 15.2 (SD = 3.5) to 6.8 (SD = 2.6). Cognitive performance, measured by the Montreal Cognitive Assessment (MoCA), improved from 23.7 (SD = 2.9) to

27.1 (SD = 2.3), indicating enhanced cognitive functioning. Emotional regulation, assessed using the Difficulties in Emotion Regulation Scale (DERS), showed significant reductions, with scores decreasing from 92.3 (SD = 8.7) to 68.5 (SD = 7.4). In contrast, the control group demonstrated minimal changes across these measures.

Table 1. Pre and Post Intervention Scores

Measure	Intervention Pre (M ± SD)	Intervention Post (M ± SD)	Control Pre (M ± SD)	Control Post (M ± SD)
HDRS	18.4 ± 3.2	9.6 ± 2.8	18.1 ± 3.4	16.9 ± 3.1
YMRS	15.2 ± 3.5	6.8 ± 2.6	14.8 ± 3.7	13.6 ± 3.4
MoCA	23.7 ± 2.9	27.1 ± 2.3	23.5 ± 2.8	23.9 ± 2.7
DERS	92.3 ± 8.7	68.5 ± 7.4	91.8 ± 9.1	88.6 ± 8.9

Explanatory analysis showed that the intervention group experienced greater improvements in emotional regulation and cognitive functioning compared to the control group. Participants in the intervention group reported a heightened ability to manage emotional triggers, supported by qualitative feedback highlighting mindfulness practices as a key factor. Cognitive performance improvements were attributed to neurofeedback training, which participants described as helpful in increasing focus and reducing cognitive distortions. These improvements were not observed in the control group, which showed negligible progress in both emotional and cognitive domains.

Inferential statistical analysis confirmed the efficacy of the neuropsychology-informed therapeutic techniques. Paired t-tests revealed statistically significant differences in pre- and post-intervention scores for HDRS ($t = 9.87, p < 0.01$), YMRS ($t = 8.45, p < 0.01$), MoCA ($t = 7.32, p < 0.01$), and DERS ($t = 10.12, p < 0.01$) within the intervention group. ANCOVA results, controlling for baseline differences, indicated significant between-group differences in post-test scores across all measures (HDRS: $F = 45.8, p < 0.01$; YMRS: $F = 39.4, p < 0.01$; MoCA: $F = 28.7, p < 0.01$; DERS: $F = 53.6, p < 0.01$). These findings validate the intervention's superiority over standard care.

Relational analysis highlighted a strong correlation between improvements in emotional regulation (DERS scores) and reductions in mood disorder symptoms (HDRS and YMRS scores) in the intervention group ($r = 0.81, p < 0.01$). Cognitive performance gains, as measured by MoCA, also correlated positively with reductions in depressive symptoms ($r = 0.72, p < 0.01$). These relationships underscore the interconnectedness of cognitive functioning, emotional regulation, and mood stabilization, supporting the integrative approach of the intervention.

A case study illustrates the transformative impact of the intervention. A 35-year-old participant diagnosed with major depressive disorder entered the program with severe symptoms, including an HDRS score of 21 and significant emotional dysregulation (DERS score of 97). By the program's conclusion, her HDRS score had decreased to 8, and her DERS score had dropped to 67. She reported enhanced self-awareness and emotional control, attributing her progress to mindfulness and neurofeedback practices. Cognitive improvements were reflected in her MoCA score, which increased from 22 to 27, enabling better decision-making and focus in daily life.

Participants in the intervention group provided qualitative feedback that highlighted the perceived benefits of the integrated therapeutic approach. Many reported feeling more in

control of their emotions and described neurofeedback as particularly effective in reducing cognitive fatigue (Siegel et al., 2020). Others noted that mindfulness practices helped them maintain a sense of balance during emotionally challenging situations. These subjective experiences provide a deeper understanding of the quantitative results, illustrating the multidimensional benefits of the intervention.

The findings suggest that neuropsychology-informed therapeutic techniques effectively address both the cognitive and emotional dimensions of mood disorders. The significant improvements observed in the intervention group demonstrate the potential of integrating cognitive-behavioral therapy, mindfulness practices, and neurofeedback training into standard treatment protocols. These results highlight the value of interdisciplinary approaches in enhancing clinical outcomes for patients with mood disorders.

The findings of this study demonstrate that neuropsychology-informed therapeutic techniques significantly improve emotional regulation, cognitive functioning, and symptom severity in patients with mood disorders (Siegel et al., 2023). Participants in the intervention group exhibited substantial reductions in depression and mania symptoms, as evidenced by their HDRS and YMRS scores. Cognitive performance improvements, reflected in MoCA scores, and enhanced emotional regulation, as indicated by DERS scores, further validate the effectiveness of the intervention. These results highlight the multifaceted benefits of integrating cognitive-behavioral therapy, mindfulness practices, and neurofeedback training into a comprehensive treatment framework.

Previous research has supported the individual effectiveness of CBT, mindfulness, and neurofeedback in managing mood disorders. However, this study's integration of these techniques into a single intervention differentiates it from earlier work. Unlike studies focusing solely on symptom management through CBT or neurofeedback, this research incorporates emotional regulation and cognitive enhancement as core components. Similar studies on mindfulness often emphasize stress reduction but lack the neuropsychological basis provided here. These differences underline the unique contribution of this study in advancing a holistic approach that addresses the cognitive, emotional, and behavioral dimensions of mood disorders simultaneously.

The results reflect the potential for neuropsychology-informed therapeutic techniques to address treatment gaps in mood disorder management. High relapse rates and residual symptoms in traditional treatments indicate the need for approaches that foster long-term recovery (Wu et al., 2020). The significant correlation between emotional regulation and symptom reduction observed in this study suggests that improving cognitive and emotional control can mitigate mood instability. These findings signify a shift toward interventions that target underlying mechanisms rather than just alleviating surface-level symptoms.

The implications of these findings are substantial for clinical practice, policy, and research. Mental health professionals can adopt this integrative approach to enhance the effectiveness of mood disorder treatments, addressing the limitations of standard care. Policymakers can use these results to advocate for interdisciplinary therapeutic frameworks that incorporate neuropsychological principles. This study also opens new avenues for research, encouraging further exploration of integrative approaches in diverse clinical settings. The findings provide a basis for developing scalable models that can be adapted for different populations, promoting accessibility and efficiency in mental health care.

The observed results can be attributed to the complementary nature of the techniques used in the intervention. Cognitive-behavioral therapy provided participants with structured strategies for reframing negative thought patterns, while mindfulness practices fostered self-awareness and emotional balance (“Corrigendum To,” 2020). Neurofeedback training enhanced participants’ cognitive capacities, including focus and memory, by addressing neural dysregulation associated with mood disorders. These combined elements created a synergistic effect, enabling participants to achieve significant improvements across cognitive, emotional, and behavioral domains.

Future research should explore the scalability and adaptability of this integrative approach across different populations and clinical settings. Longitudinal studies are needed to evaluate the sustainability of the improvements observed, particularly in maintaining emotional regulation and cognitive performance over time. The application of this model to populations with comorbid conditions, such as anxiety or substance use disorders, could provide further insights into its versatility and effectiveness. Efforts to refine and optimize the intervention for diverse cultural and socioeconomic contexts would also enhance its practical relevance.

This study provides a strong foundation for advancing therapeutic practices for mood disorders. The integration of neuropsychological principles into therapeutic techniques represents a significant innovation in mental health care. By addressing cognitive and emotional dimensions holistically, this approach offers a more comprehensive solution for managing complex psychiatric conditions (“2023 Alzheimer’s Disease Facts and Figures,” 2023b). The findings emphasize the need for interdisciplinary collaboration and innovation, paving the way for more effective, evidence-based treatments that improve patient outcomes and quality of life.

CONCLUSION

The most significant finding of this study is the effectiveness of integrating neuropsychological principles into therapeutic techniques for patients with mood disorders. Unlike traditional methods that primarily focus on symptom reduction, this intervention demonstrated substantial improvements in emotional regulation, cognitive functioning, and overall symptom severity. The integration of cognitive-behavioral therapy, mindfulness practices, and neurofeedback training provided a comprehensive approach, addressing the multifaceted nature of mood disorders. These results highlight the potential of interdisciplinary techniques in achieving better clinical outcomes compared to standard care.

The primary contribution of this research lies in its innovative methodology, which bridges the gap between neuropsychological research and practical therapeutic applications. By combining evidence-based practices into a unified framework, this study provides a replicable and adaptable model for clinical settings. The findings advance theoretical understanding by emphasizing the interconnectedness of cognitive, emotional, and neural processes in managing mood disorders. Practically, the research offers a scalable approach that can be tailored to diverse populations, promoting a holistic understanding of mental health treatment.

This study is limited by its relatively short duration, which focused on immediate post-intervention outcomes rather than long-term effects. The sample was restricted to outpatient clinical settings, potentially limiting the generalizability of findings to other populations, such as those with severe or treatment-resistant mood disorders. Future research should explore the sustainability of these improvements through longitudinal studies and assess the model’s

effectiveness across varied demographic and clinical contexts. Additional investigations into cost-effectiveness and cultural adaptability would further enhance the practical applicability of this integrative therapeutic approach.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; Investigation.

Author 3: Data curation; Investigation.

Author 4: Formal analysis; Methodology; Writing - original draft.

CONFLICTS OF INTEREST

The authors declare no conflict of interest

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