Rewiring Emotional Patterns: A Data-Driven Analysis of Break Method's Efficacy

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Abstract

Background: Traditional mental health interventions often fail to produce lasting behavioral change due to reliance on self-reporting and subjective awareness. Break Method is an innovative approach to emotional rewiring that integrates a data-driven, process-oriented framework with brain pattern mapping and personalized strategies. By addressing subconscious behavioral patterns, the program bypasses the brain's natural defenses, uncovering hidden drivers of automatic, often chaotic behaviors and cycles. Unlike approaches that foster dependency or enablement, Break Method is grounded in a firm, structured process, with a clear timeline and systematic assessments, delivering sustainable, lasting, and generational changes.

Objective: This exploratory study seeks to generate foundational insights into the program's effectiveness and to identify patterns in participant outcomes. The principal aim was to assess how the program's benefits varied based on participants' reasons for joining. By examining patterns in participants' motivations and mental health outcomes, this study offers valuable insights into the specific populations that respond most effectively to Break Method. These findings aim to guide program managers and decision-makers in optimizing intervention strategies and tailoring approaches to maximize impact across diverse groups. The primary questions are: (a) what is the overall efficacy of the program for improving mental health symptoms, and (b) which symptom is the most associated factor with program efficacy?

Methods: A total of 175 participants who completed Break Method between Fall 2018 and Spring 2022 were included in the analysis. Self-reported mental health status was assessed before and after the program using a 5-point Likert scale. Statistical tests, including paired t-tests and McNemar tests, measured symptom improvements, while analysis of covariance (ANCOVA) adjusted for baseline differences. Multiple correspondence analysis (MCA) identified participant clusters, and a generalized estimating equation (GEE) model assessed their associations with mental health improvements.

Results: Results showed significant improvements ($P < .05$), with mean Likert scores increasing from 2.07 to 3.92. The greatest improvements were observed in participants reporting self-harm/suicidal ideation (? = 0.511, 95% CI: 0.091, 0.931), OCD-related symptoms (? = 0.455, 95% CI: 0.061, 0.850), and anxiety (? = 0.332, 95% CI: 0.073, 0.591). MCA revealed three participant clusters: those struggling with self-image (e.g., depression, low confidence, self-sabotage), those focused on career and personal growth, and those with OCD-related concerns. The self-image cluster exhibited the most significant symptom reductions (? = 0.348, 95% CI: 0.060, 0.636).

Conclusions: These findings suggest that Break Method effectively improves mental health, particularly for individuals experiencing anxiety, low confidence, and self-sabotage. Identifying participant clusters highlights the importance of tailoring interventions to maximize impact. While results are promising, further research using standardized clinical measures and longitudinal follow-ups is needed to confirm long-term efficacy and broader applicability

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Rewiring Emotional Patterns: A Data-Driven Analysis of Break Method's Efficacy

Abstract

Traditional mental health interventions often fail to produce lasting behavioral change due to reliance on self-reporting and subjective awareness. Break Method is a structured, process-driven approach that rewires subconscious emotional patterns using brain pattern mapping and behavioral strategies. This study evaluated its effectiveness in improving self-reported mental health symptoms and examined which symptoms were most associated with program efficacy. It also explored whether participant motivations influenced outcomes.

A total of 175 participants who completed Break Method between Fall 2018 and Spring 2022 were included in the analysis. Self-reported mental health status was assessed before and after the program using a 5-point Likert scale. Statistical tests, including paired t-tests and McNemar tests, measured symptom improvements, while analysis of covariance (ANCOVA) adjusted for baseline differences. Multiple correspondence analysis (MCA) identified participant clusters, and a generalized estimating equation (GEE) model assessed their associations with mental health improvements.

Results showed significant improvements ($P < .05$), with mean Likert scores increasing from 2.07 to 3.92. The greatest improvements were observed in participants reporting self-harm/suicidal ideation (β = 0.511, 95% CI: 0.091, 0.931), OCD-related symptoms (β = 0.455, 95% CI: 0.061, 0.850), and anxiety (β = 0.332, 95% CI: 0.073, 0.591). MCA revealed three participant clusters: those struggling with self-image (e.g., depression, low confidence, self-sabotage), those focused on career and personal growth, and those with OCD-related concerns. The self-image cluster exhibited the most significant symptom reductions (β = 0.348, 95% CI: 0.060, 0.636).

These findings suggest that Break Method effectively improves mental health, particularly for individuals experiencing anxiety, low confidence, and self-sabotage. Identifying participant clusters highlights the importance of tailoring interventions to maximize impact. While results are promising, further research using standardized clinical measures and longitudinal follow-ups is needed to confirm long-term efficacy and broader applicability.

Keywords

Break Method; Mental health intervention; emotional rewiring; brain pattern mapping; behavior-based therapy

Introduction

Recent studies have related mental health symptoms such as depression to the brain activity of normal controls [1]. Break Method is an innovative approach to emotional rewiring that integrates a

data-driven, process-oriented framework with brain pattern mapping and personalized strategies. By addressing subconscious behavioral patterns, the program bypasses the brain's natural defenses, uncovering hidden drivers of automatic, often chaotic behaviors and cycles. Unlike approaches that foster dependency or enablement, Break Method is grounded in a firm, structured process, with a clear timeline and systematic assessments, delivering sustainable, lasting, and generational changes.

This exploratory study seeks to generate foundational insights into the program's effectiveness and to identify patterns in participant outcomes. The principal aim was to assess how the program's benefits varied based on participants' reasons for joining. By examining patterns in participants' motivations and mental health outcomes, this study offers valuable insights into the specific populations that respond most effectively to Break Method. These findings aim to guide program managers and decision-makers in optimizing intervention strategies and tailoring approaches to maximize impact across diverse groups. The primary questions are: (a) what is the overall efficacy of the program for improving mental health symptoms, and (b) which symptom is the most associated factor with program efficacy?

Methods

Recruitment

This study recruited participants between Fall 2018 and Spring 2022. Participants were paying customers of Break Method who voluntarily enrolled in the program. There were no specific criteria for inclusion based on demographic background, as all individuals who participated in the program during this time frame were invited to complete the survey. Participation in the survey was mandatory for clients who had opted to be surveyed at program entry.

The program is entirely self-paced, with most participants completing it within 4 to 6 months. It includes four interactive video modules, six one-on-one sessions with a dedicated Behavior Strategist, a 140-page workbook, and a final strategy session that generates a customized Behavior Strategy Plan ranging from 30 to 100 pages. Participants also had access to a dedicated Client Support Specialist and a community forum for peer support. All activities were conducted through a secure online portal, accessible only via unique usernames and passwords.

Upon program completion, participants were required to complete a survey as part of the Exit Interview process. The survey was administered via Google Forms and collected participants' names, email addresses, self-reported mental health status before and after the program, frequency of

participation, and reasons for joining. The question about participants' reasons for joining included 13 response options, allowing participants to select multiple answers: anxiety; depression; relationship issues; poor self-image/low confidence; disordered eating; self-harm/suicidal ideation; OCD/counting/excessive worry with a calculating nature; parenting issues; addiction; career/workplace issues; self-sabotage/stagnation; future goals/next steps; and general self-discovery. Instructions emphasized the importance of providing honest responses to improve the program's efficacy.

Demographic data, including age, biological sex, gender, and socioeconomic status, were also collected but were not analyzed in this study. Survey responses were linked to participants' unique user IDs to ensure data accuracy while maintaining confidentiality as described in the Ethical Considerations subsection. From an initial 286 participants, 20 duplicate responses were removed. Duplicate entries occurred when participants interrupted the response process and resumed it later, resulting in multiple entries for the same individual. Among the remaining participants, those who did not respond to questions about the degree of symptoms (n = 91) were excluded, leaving 175 participants in the final analysis.

Outcome

Participants' mental health status was assessed using a 5-point Likert scale for two questions in the survey: "How would you rate your symptoms at the start of the Break Method?" and "How would you rate your symptoms after completing the Break Method?" Responses ranged from 0 (Terrible/Debilitating) to 5 (Symptoms Resolved). Changes in mental health were measured by the difference between the pre- and post-program Likert scores. We also assessed mental health status by categorizing the Likert scores into two groups: 1 for scores ≥4 and 0 for scores <4, applied to both pre- and post-program scores.

Ethical Considerations

This study was conducted in adherence to ethical principles governing research involving human participants. All participants provided informed consent via signed agreements facilitated through Docusign before taking part in the survey. The consent process ensured that participants were fully informed about the study's purpose, procedures, and the intended use of their responses. Participation was entirely voluntary, with no incentives provided, ensuring that consent was given freely and without coercion.

This study did not require prior approval from an Institutional Review Board (IRB) under the *U.S. Common Rule exemption 45 CFR 46.104(d)(2)*, which applies to research involving survey procedures where subjects cannot be identified, and responses do not place participants at risk. Per

this federal regulation, research utilizing anonymous, minimal-risk survey data without personally identifiable information does not fall under the category of "human subjects research" requiring IRB review.

To protect participant anonymity and ensure data security, responses were linked to unique user IDs rather than personal identifiers. All data was securely stored within a protected database, with access restricted to authorized personnel only. These measures ensured privacy and confidentiality throughout the study.

The study was designed to minimize risk to participants. As part of the recruitment process, individuals requiring crisis-oriented mental health care, including those actively experiencing suicidal ideation, were excluded from participation to ensure the study's suitability. This exclusion criterion was implemented in alignment with policies on research with vulnerable populations, prioritizing participant safety.

No adverse events were reported during the study, and all participants completed the survey without incident. Given that this was a minimal-risk study involving anonymous self-report surveys, there were no anticipated physical, psychological, or legal risks to participants.

Although this study did not undergo formal IRB review, the research team followed rigorous ethical protocols to ensure participant protection. In cases where institutional review boards are not required for minimal-risk survey research, best practices recommend maintaining high ethical standards, including obtaining informed consent, ensuring data security, and prioritizing participant well-being. The authors acknowledge the absence of formal IRB approval as a limitation but emphasize that the study adhered to recognized ethical frameworks governing research with human participants.

Statistical Analysis

Statistical analyses were performed (a) to assess overall changes in symptom severity after participating in the program and (b) to examine how changes in symptom severity were associated with the presence of each type of symptom or reasons for joining the program.

The trend of overall changes in mental health symptom severity was estimated using a paired t-test, comparing the pre-program and post-program 5-point Likert scale scores for all participants. Additionally, the McNemar test, which analyzes paired nominal data in a 2x2 contingency table, was conducted to assess whether there was a significant change in mental health status after the program. This test was applied to a binary variable, where a score ≥4 was coded as 1 and a score ≤4 as 0, both before and after the program.

To explore the second question, the Mann-Whitney U test was used to compare post-program and pre-program means of the Likert scores by the status of each mental health symptom or reason for joining the program. For example, the difference in score changes after the program was compared among participants with and without self-reported responses for anxiety. Additionally, the Cochran-

Mantel-Haenszel test [2] was applied to binary variables (i.e., 1 for scores ≥4, 0 for scores <4) of the Likert-scale mental health status to assess whether changes in outcomes were significantly associated with each mental health symptom or reason for joining the program.

In addition to the bivariate analysis (Mann-Whitney U test, Cochran-Mantel-Haenszel test), a regression approach was conducted to assess the program's effect on changing mental health status across different factors of mental health symptoms and reasons for joining the program. An analysis of covariance (ANCOVA), a statistical method combining regression analysis with analysis of variance (ANOVA) [3], was performed. In this analysis, the change in the Likert score after the program (i.e., post-program score minus pre-program score) was used as the outcome variable, as widely applied in literature [4]. The ANCOVA model included the presence or absence of a specific reason for joining the program (coded as yes vs. no) and controlled for the baseline score (i.e., pre-program score). Since baseline scores for mental health status can differ across groups (Figure 1), adjustments for baseline imbalances were applied following recommendations in the literature [5]. This adjustment minimizes bias in estimating the program's effect by accounting for potential variability in pre-program scores. The ANCOVA was applied to each mental health symptom or reason for joining the program separately.

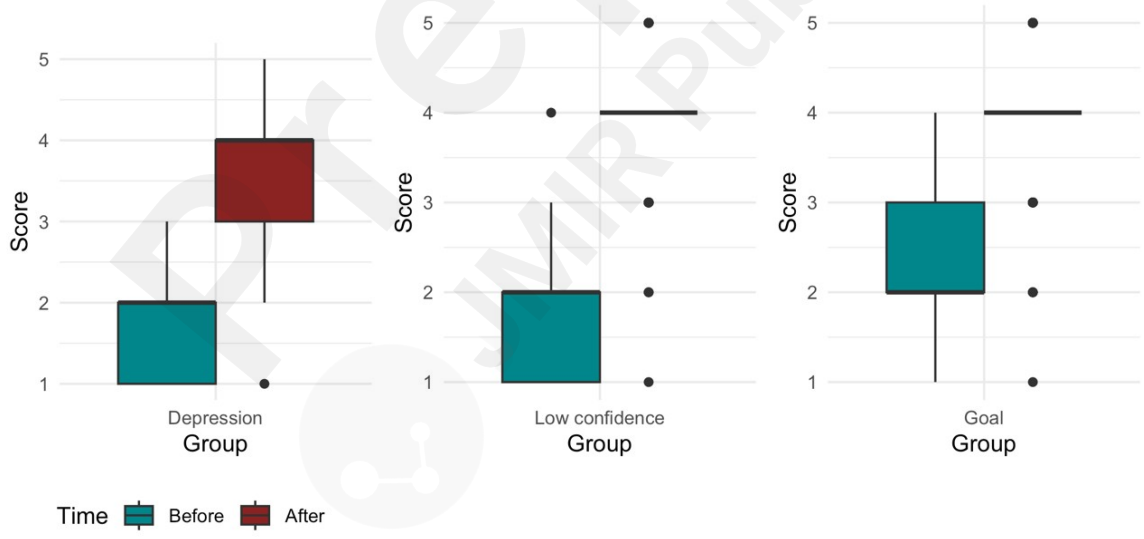


Figure 1. Boxplots of the 5-point Likert score (0: terrible/debilitating, 5: all good) before and after the Break Method Program among participants who chose 'depression', 'poor self-image/ low confidence', or 'future goals/next steps' as their reason for joining.

Multiple responses (e.g., depression co-existing with anxiety or self-harm) in the data were highly correlated. To uncover hidden dimensions and clusterings, multiple correspondence analysis (MCA), an extension of principal component analysis (PCA) for categorical variables, was conducted [6].

MCA decomposes a contingency table (Burt matrix) of categorical variables, identifying patterns and relationships as dimensions in a lower-dimensional space [7]. The number of dimensions was determined using a scree plot, where higher eigenvalues represent a larger share of explained variance. A biplot visualized how reasons for joining the program clustered in two dimensions, with principal coordinates calculated based on inertia or eigenvalue criteria [7]. In the biplot, the numbers 1 and 0 next to each variable represent binary outcomes (1 = yes, 0 = no).

The corresponding coordinates of the individuals, along with the identified dimensions, were used in a generalized estimating equation (GEE) model to evaluate the association of each principal dimension with changes in mental health status after the program. The GEE approach is suitable for repeated measures and clustered data, focusing on population-averaged effects rather than individual-specific effects:

$$y_{it} = \beta_0 + \beta_j Dim_{jit} + Preit + E_{it}$$

, where yit is the change in the 5-point Likert score for mental health status between pre- and post-program (i.e., post-program score minus pre-program score) of i-th individual measured at time t, xit is the time-varying variable of the j-th dimension obtained from the MCA (i.e., the coordinate on the j-th dimension) of the i-th individual at time t, εit is the random error term, and βj is the coefficient for the j-th MCA dimension, and Preit is the pre-program baseline Likert score for the mental health status. The model assumed a constant correlation between repeated measures for an individual. The β1 represents how the principal MCA dimension affects the outcome (i.e., changes in mental health status).

The statistical analyses were conducted in R Software version 4.2.2.

Results

We used data from a total of 175 participants, of whom 15 responded to the survey two or more times during the study period, resulting in 195 unique responses. Figure 2 illustrates the frequency of responses for joining Break Method. The most frequently chosen reason among participants was ‘Self-sabotage/stagnation’ (n = 149, 85.1%), followed by ‘Future goals/next steps’ (n = 147, 84.0%) and ‘General self-discovery’ (n = 147, 84.0%). Other commonly selected responses included ‘Anxiety’ (n = 116, 66.3%), ‘Relationship issues’ (n = 120, 68.6%), and ‘Poor self-image/low confidence’ (n = 105, 60.0%). The least chosen responses were ‘Self-harm/suicidal ideation’ (n = 19, 10.9%) and ‘OCD’ (n = 22, 12.6%).

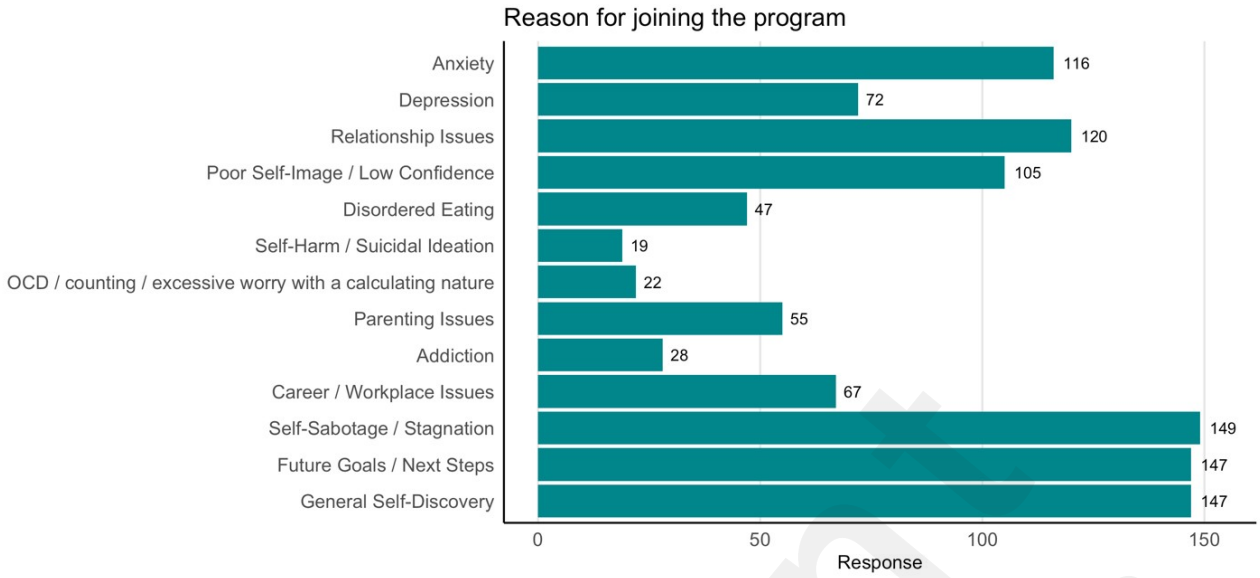


Figure 2. Participant reported reasons for enrolling in the program

Among the 195 responses, 186 respondents (95.4%) reported Likert scores smaller than four before the program (Figure 3). After the program, 157 responses (80.5%) reported Likert scores of four or higher. The paired t-test revealed significant increases in the 5-point Likert scale after program participation (pre-program score mean = 2.07, post-program score mean = 3.92, p-value P<.001). The McNemar test for the 2x2 table comparing mental health status (e.g., ≥4 vs. <4 Likert score) before and after the program also indicated a significant difference in the frequency of mental health status (p-value, P<.001).

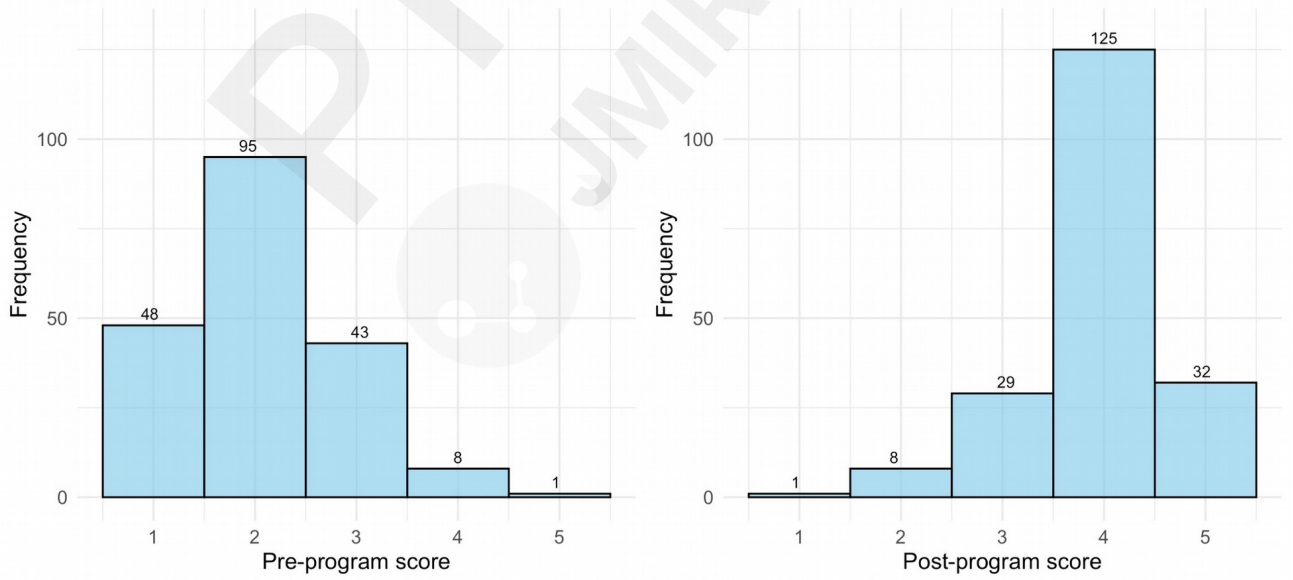


Figure 3. Frequency of the 5-point Likert score for mental health status before and after the program participation (n=195).

The average of pre- and post-program 5-point Likert scores stratified by each reason for joining the program is shown in Table 1.

Table 1. Pre- and post-program Likert score means, stratified by the joining reasons.

Reason	Presence	Pre-program mean	Post-program mean	p-value*
Anxiety	(+)	2.42	3.94	*P*<.001
	(-)	1.84	3.91	
Depression	(+)	1.69	3.72	*P*=.15
	(-)	2.29	4.03	
Relationship issues	(+)	1.95	3.86	*P*=.07
	(-)	2.27	4.01	
Poor self-image / low confidence	(+)	1.84	3.87	*P*=.010
	(-)	2.34	3.98	
Disordered eating	(+)	1.79	3.81	*P*=.14
	(-)	2.16	3.95	
Self-sabotage / stagnation	(+)	1.93	3.86	*P*=.03
	(-)	2.54	4.11	
General self-discovery	(+)	2.11	3.99	*P*=.55
	(-)	1.96	3.71	
Self-harm / suicidal ideation	(+)	1.47	3.89	*P*=.01
	(-)	2.14	3.92	
OCD / counting / excessive worry with a calculating nature	(+)	1.55	3.91	*P*=.01
	(-)	2.14	3.92	
Parenting issues	(+)	2.00	3.98	*P*=.25
	(-)	2.10	3.89	
Career / workplace issues	(+)	1.85	3.84	*P*=.11
	(-)	2.19	3.96	
Future goals / next steps	(+)	2.13	3.95	*P*=.12
	(-)	1.90	3.83	
Addiction	(+)	1.68	3.89	*P*=.05
	(-)	2.14	3.92	

Note. * P-value is based on the Mann-Whitney U test comparing the changes in the pre- and post-program scores between the groups with and without the specified reason for joining.

Using ANCOVA, we compared mean changes in Likert scores (post-program score minus pre-program score) across groups stratified by the presence of each reason for joining the program (Table 2). The beta coefficient, indicating the score changes after the program, was highest for ‘Self-harm/suicidal ideation’ (beta = 0.511, 95% CI: 0.091, 0.931), followed by ‘OCD/counting/excessive worry with a calculating nature’ (beta = 0.455, 95% CI: 0.061, 0.850). Positive and significant changes in scores were also associated with ‘Anxiety’ (beta = 0.332, 95% CI:

0.073, 0.591). The smallest absolute score change was observed for ‘Parenting issues’ (beta = 0.132, 95% CI: 0.020, 0.244).

Table 2. Results of the ANCOVA.

Variable	Beta (95% CI)	*p*-value
Anxiety	0.332 (0.073, 0.591)	*P*=.01
Depression	0.107 (-0.158, 0.371)	*P*=.43
Poor self-image / low confidence	0.203 (-0.053, 0.459)	*P*=.12
Disordered eating	0.149 (-0.146, 0.444)	*P*=.32
Self-sabotage / stagnation	0.020 (-0.290, 0.329)	*P*=.90
General self-discovery	0.213 (-0.079, 0.505)	*P*=.15
Self-harm / suicidal ideation	0.511 (0.091, 0.931)	*P*=.02
OCD / counting / excessive worry with a calculating nature	0.455 (0.061, 0.850)	*P*=.03
Parenting issues	0.155 (-0.125, 0.434)	*P*=.28
Career / workplace issues	0.093 (-0.174, 0.360)	*P*=.50
Future goals / next steps	-0.106 (-0.399, 0.186)	*P*=.48
Relationship issues	0.132 (-0.126, 0.391)	*P*=.32
Addiction	0.297 (-0.062, 0.655)	*P*=.11

Note. The model was adjusted for the baseline Likert-score differences.

The estimated Eigenvalues indicated how much variance each dimension explained in the multiple correspondence analysis (MCA). Dimension 1 accounted for 22.7% of the data variance, while dimensions 2 and 3 accounted for 11.9% and 10.0%, respectively. The biplot of the MCA (Figure 4) provided a graphical representation of relationships between the different categories of reasons for joining Break Method in the reduced multidimensional space. By examining dimensions 1 and 2, we observed a cluster of participants exhibiting shared characteristics, including depression, low confidence, relationship issues, and self-sabotage/stagnation. Another distinct cluster comprised participants focused on future goals, self-discovery, and career or workplace challenges. Lastly, a third category appeared to consist of participants displaying OCD-related symptoms.

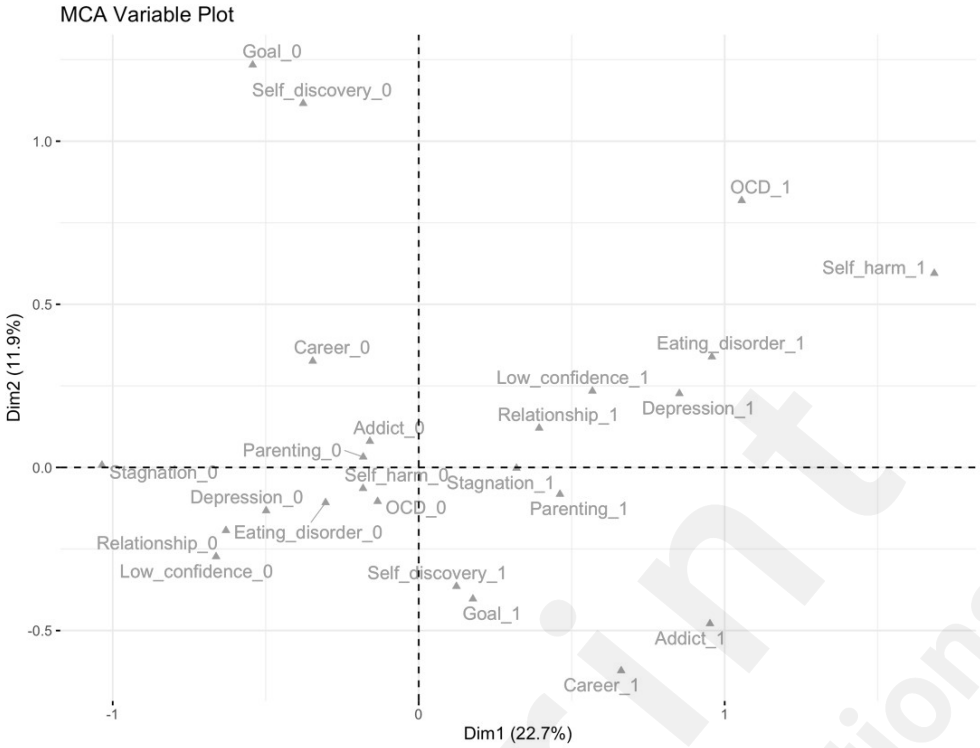


Figure 4. Biplot of the multiple correspondence analysis (MCA).

The coefficients for the MCA latent dimensions were examined in relation to changes in the 5-Likert scores for symptoms upon completing the program. Dimension 1 (i.e., ‘Low self-image’) was significantly and positively associated with higher increases in Likert scores (beta = 0.348, 95% CI: 0.060, 0.636), indicating significant effects among participants who joined the program due to depression, low confidence, relationship issues, or self-sabotage/stagnation. Dimension 2 (e.g., self-discovery, future goals) indicated a positive but nonsignificant effect (beta = 0.168, 95% CI: -0.205, 0.540). Dimension 3 (i.e., ‘OCD’) was not significantly associated with changes in Likert scores (beta = -0.031, 95% CI: -0.423, 0.362).

Discussion

This study recruited participants for Break Method and assessed its impact on their mental health, focusing on the participants' characteristics as determined by their reasons for joining the program. The results indicated that several factors, including anxiety, OCD, and self-harm/suicidal ideation, were significantly associated with positive changes in Likert scores for mental health status after program participation. Furthermore, the results revealed that participants’ reasons for joining the program clustered into three latent dimensions: ‘low self-image,’ ‘life development,’ and ‘OCD-related issues.’ Notably, participants with depression, low confidence, relationship issues, or self-sabotage/stagnation experienced significant improvements in their mental health as measured by the

5-Likert scale after participating in Break Method.

Our analysis revealed two to three distinct clusters for participants' reasons for joining Break Method. The first and second dimensions identified by the MCA distinguished participants with mental and psychological issues (e.g., depression, low confidence) from those with life-development goals (e.g., career issues, future goals). Participants who joined the program for reasons related to depression, low confidence, relationship issues, and self-sabotage/stagnation tended to form a cluster, suggesting a shared pattern of challenges and motivations. Another distinct cluster consisted of participants seeking support for future goals, self-discovery, or career/workplace challenges, highlighting a different set of motivations. Finally, participants associated with OCD-related issues appeared as a third, less interconnected cluster, emphasizing the variability in outcomes for this group.

Despite its promising findings, this study has limitations that should be acknowledged. One key limitation is that while demographic data (e.g., age, gender, socioeconomic status) were collected, they were not analyzed in relation to program outcomes. This omission restricts the ability to examine potential correlations between demographic factors and the program's effectiveness. Additionally, the study employed a 5-point Likert scale to assess mental health status, rather than validated clinical tools such as the Patient Health Questionnaire-9 (PHQ-9) [8]. The use of a non-standardized measure introduces potential variability in the assessment of mental health improvements.

Furthermore, reliance on self-reported data may have contributed to response bias, as participants' perceptions, expectations, or tendencies toward social desirability could have influenced their reported improvements. Finally, the absence of a long-form questionnaire limited the ability to capture more nuanced insights into participants' mental health status before and after the program. Future research should consider incorporating standardized clinical measures and longitudinal follow-ups to enhance the validity and depth of findings.

Conclusion

This study provides empirical evidence of the effectiveness of Break Method in improving mental health status, particularly among individuals struggling with anxiety, low confidence, and self-sabotage. These findings highlight the importance of structured, behavior-based interventions in addressing emotional dysregulation and promoting sustainable mental health improvements. By identifying key participant clusters, this research suggests that personalized intervention strategies

could enhance program effectiveness and inform future refinements of Break Method.

The study underscores the need for further research to explore the long-term efficacy of Break Method, its applicability across diverse populations, and its potential integration into broader mental health care systems. Future studies should consider employing standardized clinical measures and longitudinal designs to deepen the understanding of Break Method's sustained impact. These findings serve as a foundation for developing more tailored, scalable interventions that can be adapted across different mental health treatment settings

Conflict of Interest

The authors declare no conflicts of interest related to this study. The research was conducted independently, with no financial or institutional influence that could have impacted the study's design, data collection, analysis, or interpretation of results. All participants voluntarily enrolled in the program and provided informed consent. No external funding or sponsorships were received for this research.

List of Abbreviations

ANCOVA – Analysis of Covariance
GEE – Generalized Estimating Equation
IRB – Institutional Review Board
MCA – Multiple Correspondence Analysis
OCD – Obsessive-Compulsive Disorder
PCA – Principal Component Analysis
PHQ-9 – Patient Health Questionnaire-9

References

1. Xu, J., He, K., Zhang, K., Yang, C., Nie, L., Dan, D., ... & Yang, X. Low-Dose Copper Exposure Exacerbates Depression-Like Behavior in ApoE4 Transgenic Mice. Oxidative medicine and cellular longevity, 2021(1), 6634181; 2021
2. Hazra, A., & Gogtay, N. Biostatistics series module 4: comparing groups–categorical variables. Indian journal of dermatology, 61(4): 385-392; 2016
3. Khammar, A., Yarahmadi, M., & Madadizadeh, F. What is analysis of covariance (ANCOVA) and how to correctly report its results in medical research?. Iranian journal of public health, 49(5), 1016; 2020
4. Jamieson, J. Analysis of covariance (ANCOVA) with difference scores. International Journal

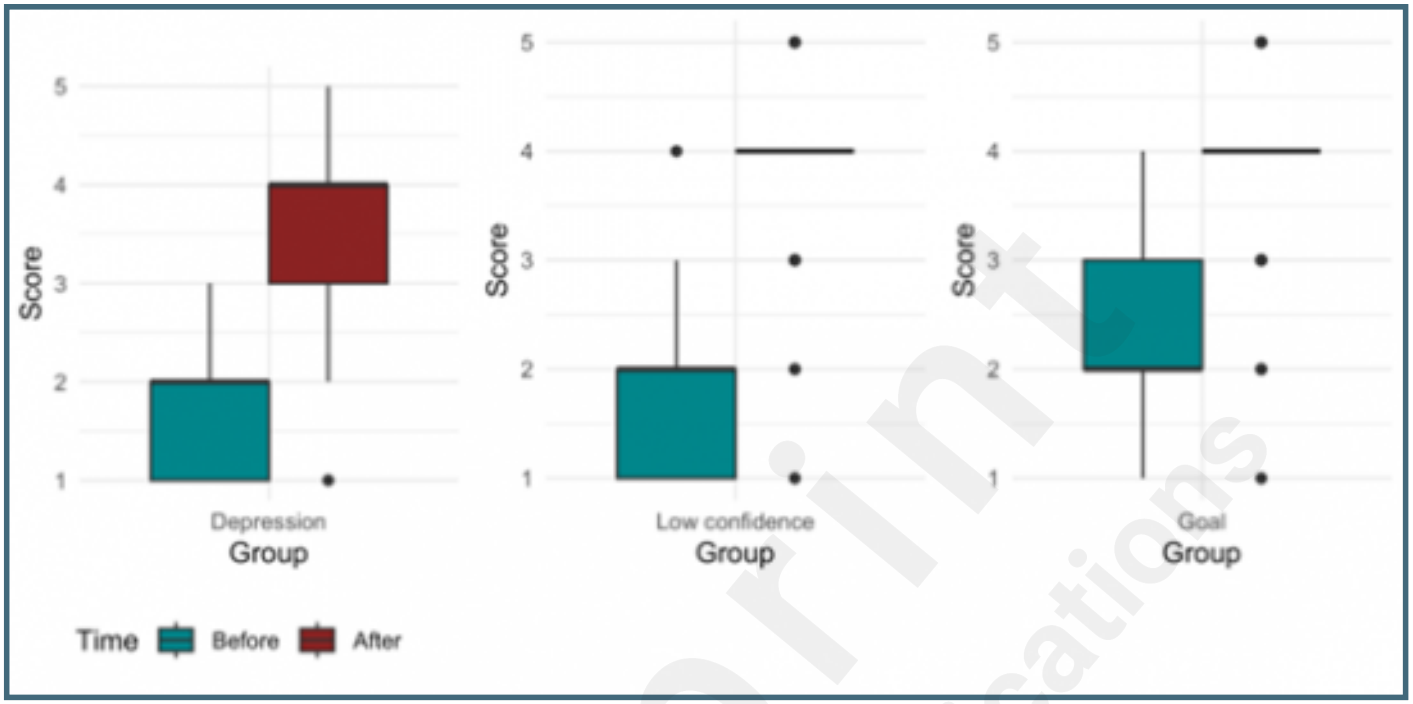
of Psychophysiology, 52(3): 277-283; 2004

5. Clifton, L., & Clifton, D. A. The correlation between baseline score and post-intervention score, and its implications for statistical analysis. Trials, 20: 1-6; 2019
6. Costa, P. S., Santos, N. C., Cunha, P., Cotter, J., & Sousa, N. The use of multiple correspondence analysis to explore associations between categories of qualitative variables in healthy ageing. Journal of aging research, 2013(1), 302163; 2013
7. Olugbara, C. T., Letseka, M., & Olugbara, O. O. Multiple Correspondence Analysis of Factors Influencing Student Acceptance of Massive Open Online Courses. Sustainability, 13(23), 13451; 2021
8. Beard, C., Hsu, K. J., Rifkin, L. S., Busch, A. B., & Björgvinsson, T. Validation of the PHQ-9 in a psychiatric sample. Journal of affective disorders: 193, 267-273; 2016

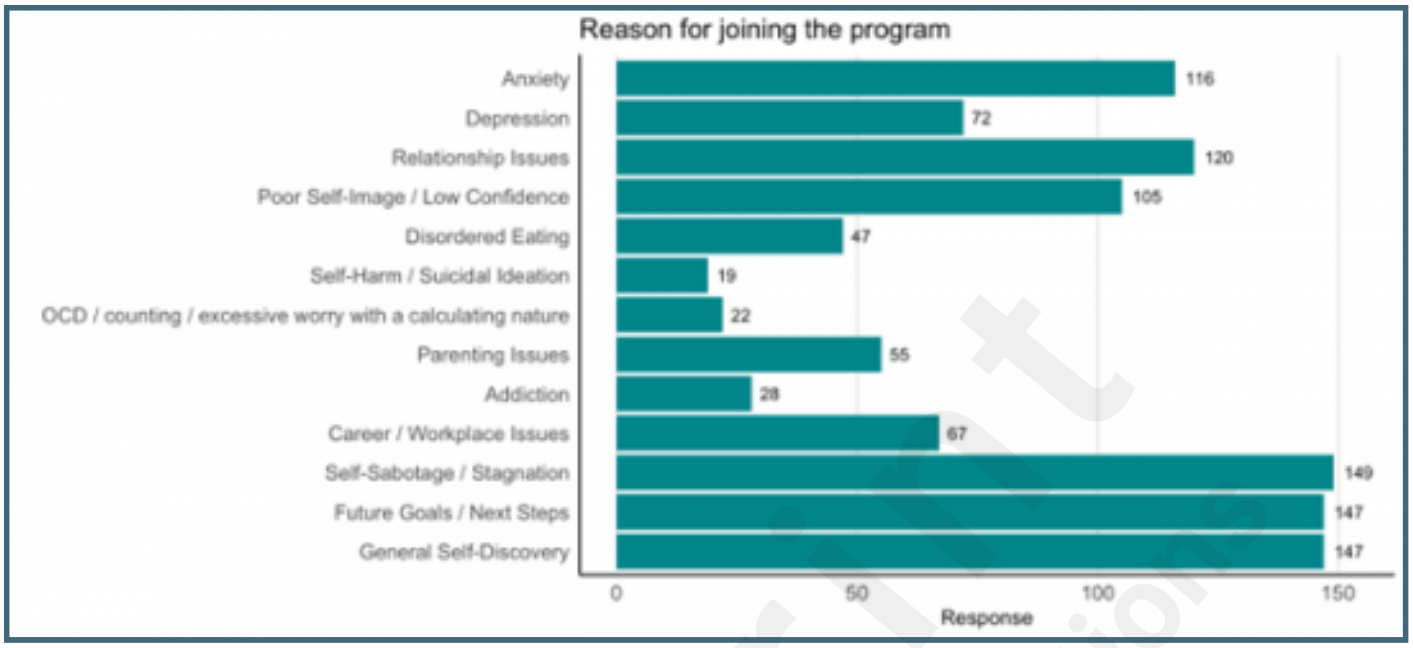
Supplementary Files

Figures

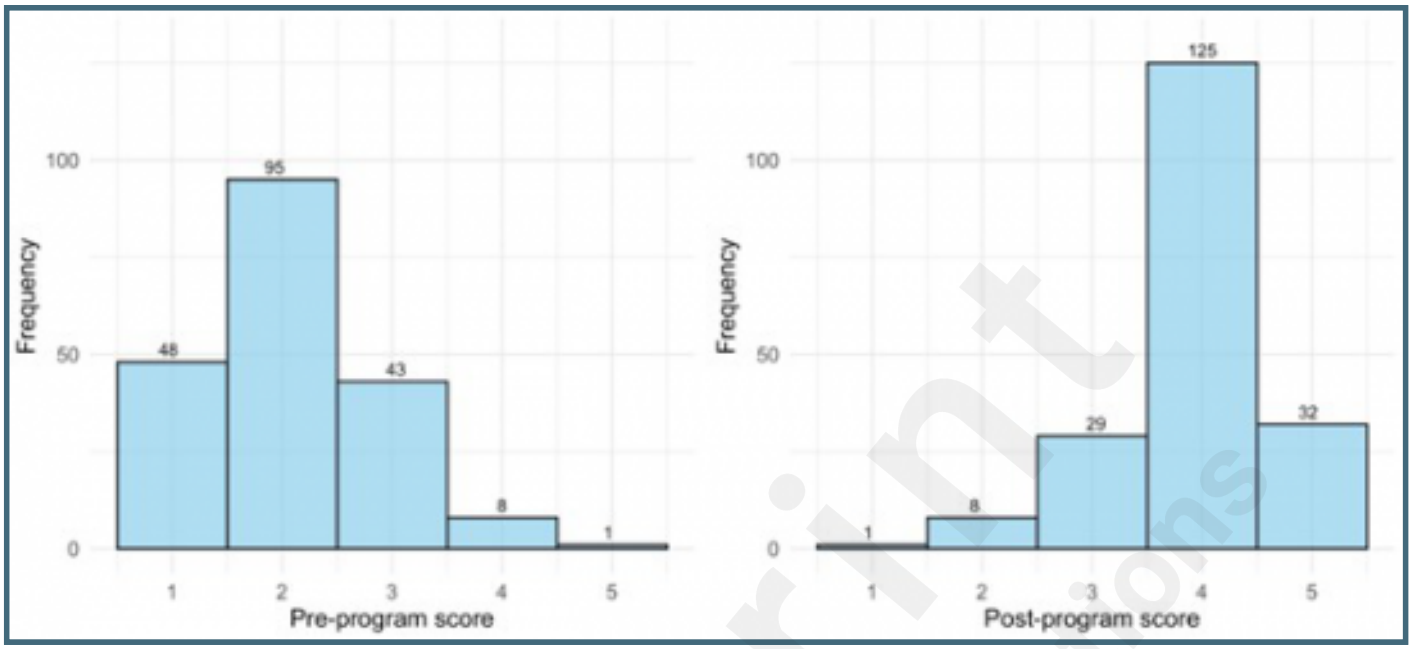
Boxplots of the 5-point Likert score (0: terrible/debilitating, 5: all good) before and after the Break Method Program among participants who chose ‘depression’, ‘poor self-image/low confidence’, or ‘future goals/next steps’ as their reason for joining.



Participant reported reasons for enrolling in the program.



Frequency of the 5-point Likert score for mental health status before and after the program participation (n=195).



Biplot of the multiple correspondence analysis (MCA).