Comparing the Effectiveness of Schema Therapy and Acceptance and Commitment Therapy on Alexithymia in Women with Multiple Sclerosis

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ABSTRACT

The present study aimed to compare the effectiveness of schema therapy and acceptance and commitment therapy in reducing alexithymia among women diagnosed with multiple sclerosis. This applied, semi-experimental study employed a pretest–posttest–follow-up design with a control group. The statistical population consisted of women with multiple sclerosis who referred to the Tehran Multiple Sclerosis Society during 2024–2025. Using an available sampling method, 45 eligible participants were selected and randomly assigned to three groups: schema therapy, acceptance and commitment therapy, and a control group, each comprising 15 participants. The two experimental groups received ten 90-minute group intervention sessions based on standardized protocols, while the control group received no psychological intervention. Data were collected using the Toronto Alexithymia Scale. Descriptive statistics and repeated-measures analysis of covariance were conducted using SPSS version 26, with pretest scores entered as covariates. Inferential analyses revealed a statistically significant main effect of group on alexithymia scores at posttest and follow-up. Both schema therapy and acceptance and commitment therapy resulted in significant reductions in alexithymia compared with the control group (p < 0.001). Post-hoc comparisons indicated that schema therapy led to significantly greater reductions in alexithymia than acceptance and commitment therapy at follow-up (p < 0.001). The group-by-time interaction was significant, demonstrating differential patterns of change over time. Effect size estimates indicated a large effect for the group factor, and robust HC3 estimates confirmed the stability of the results. Both schema therapy and acceptance and commitment therapy were effective in reducing alexithymia in women with multiple sclerosis; however, schema therapy demonstrated superior and more sustained effects, suggesting its particular suitability for addressing deep-seated emotional processing deficits in this population.

Keywords: Multiple sclerosis; Alexithymia; Schema therapy; Acceptance and commitment therapy; Women

Introduction

Multiple sclerosis (MS) is a chronic, immune-mediated neurological disease characterized by progressive demyelination of the central nervous system, leading to a wide range of physical, cognitive, and psychosocial impairments. Beyond its well-documented motor and sensory symptoms, MS is increasingly recognized as a condition that profoundly affects emotional processing, psychological adjustment, and interpersonal functioning. Emotional disturbances in MS are not merely secondary reactions to physical disability but are

closely intertwined with neurobiological changes, disease uncertainty, and long-term psychosocial stressors (1, 2). Among the emotional difficulties observed in individuals with MS, alexithymia has emerged as a particularly salient and clinically significant construct.

Alexithymia is defined as a multidimensional personality trait characterized by difficulty identifying and describing emotions, limited imaginative capacity, and a predominantly externally oriented cognitive style. Individuals with high levels of alexithymia often struggle to recognize internal emotional states, communicate feelings effectively, and regulate affective experiences, which in turn increases vulnerability to psychological distress and maladaptive coping strategies. In neurological populations, and especially in MS, alexithymia has been shown to correlate with disease severity, fatigue, depression, anxiety, and reduced quality of life (1, 2). These findings underscore the importance of addressing emotional processing deficits as a core component of comprehensive MS care.

Women constitute a disproportionately large segment of the MS population, both globally and regionally, and they appear to experience more pronounced emotional and psychosocial challenges compared with men. Gender-specific social roles, heightened relational expectations, and differential coping socialization may further exacerbate emotional suppression and difficulties in emotional expression among women with chronic illness. Empirical studies have indicated that women with MS report higher levels of emotional distress, interpersonal sensitivity, and affective dysregulation, making alexithymia a particularly relevant therapeutic target in this population (3, 4). Failure to adequately process and express emotions not only worsens psychological outcomes but may also negatively influence treatment adherence, disease self-management, and social functioning.

Contemporary psychological models conceptualize alexithymia not merely as a stable personality trait but as a modifiable process influenced by early developmental experiences, maladaptive cognitive-emotional schemas, and experiential avoidance patterns. A growing body of research has demonstrated robust associations between early maladaptive schemas and alexithymia across clinical and non-clinical populations (5-7). Early maladaptive schemas, as defined within schema theory, are pervasive and self-defeating emotional and cognitive patterns formed in childhood or adolescence and elaborated throughout life. These schemas shape how individuals perceive themselves, others, and the world, and they play a central role in emotional awareness, regulation, and expression.

Schema-based research has consistently shown that schemas related to emotional deprivation, defectiveness, abandonment, and emotional inhibition are strongly predictive of alexithymic features (8, 9). These schemas foster emotional suppression and disconnection from internal states, thereby reinforcing alexithymia over time. Meta-analytic evidence further confirms that early maladaptive schemas mediate the relationship between early adversity and alexithymia, highlighting their central etiological role (7). In populations coping with chronic illness, such as MS, these schemas may be reactivated or intensified due to ongoing stress, uncertainty, and perceived loss of control.

Schema therapy was developed precisely to target such deep-seated emotional and cognitive patterns. Integrating elements from cognitive-behavioral, attachment-based, experiential, and psychodynamic approaches, schema therapy aims to modify early maladaptive schemas, reduce dysfunctional coping styles, and promote healthier emotional expression and relational patterns. A growing body of empirical research supports the effectiveness of schema therapy in reducing alexithymia across diverse populations, including

women with depressive disorders, relational dysfunctions, and trauma histories (10-12). These findings suggest that schema therapy may be particularly well-suited for addressing the entrenched emotional processing deficits observed in women with MS.

Parallel to schema-focused approaches, acceptance and commitment therapy (ACT) has gained increasing attention as an effective third-wave behavioral intervention for emotional dysregulation and experiential avoidance. ACT conceptualizes psychological suffering as the result of rigid attempts to control or avoid unwanted internal experiences, including emotions, thoughts, and bodily sensations. From this perspective, alexithymia is closely linked to experiential avoidance, as individuals disengage from emotional awareness to minimize perceived distress. ACT aims to increase psychological flexibility through acceptance, mindfulness, cognitive defusion, values clarification, and committed action.

A substantial body of research has demonstrated the efficacy of ACT in reducing alexithymia and improving emotional awareness in both clinical and medical populations (13-16). In chronic illness contexts, ACT has been shown to alleviate emotional distress, enhance coping, and improve quality of life by fostering a more open and nonjudgmental relationship with internal experiences. Specifically in MS populations, ACT-based interventions have yielded promising results in reducing alexithymia, fatigue, depression, and emotional instability (3, 4).

Despite the growing evidence base for both schema therapy and ACT, comparative studies examining their relative effectiveness on alexithymia remain limited, particularly in neurological populations. Existing comparative research has primarily focused on relational or psychiatric samples, such as women affected by marital infidelity, domestic violence, or mood disorders, with results suggesting that both approaches are effective but may differ in the depth and durability of emotional change (17-20). Schema therapy often demonstrates stronger long-term effects on emotional insight and structural change, whereas ACT tends to show more rapid improvements in emotional acceptance and functional coping.

In Iranian contexts, interest in emotion-focused and third-wave interventions has expanded substantially over the past decade, with multiple studies documenting the effectiveness of ACT and schema-based interventions on alexithymia across diverse female populations (21-23). However, there remains a notable gap in the literature regarding women with MS, a population facing unique emotional challenges due to the interaction between neurological impairment, chronic stress, and gender-specific psychosocial demands. Moreover, few studies have incorporated follow-up assessments to evaluate the sustainability of treatment effects over time, limiting conclusions about long-term efficacy.

Theoretical integration of schema theory and ACT also reveals meaningful contrasts that warrant empirical comparison. Schema therapy emphasizes emotional awareness through experiential techniques and corrective emotional experiences, directly targeting deficits in emotion identification and expression. In contrast, ACT focuses less on modifying emotional content and more on changing the individual's relationship with emotions, promoting acceptance rather than emotional analysis. These distinct mechanisms suggest that while both approaches may reduce alexithymia, they may do so through different therapeutic pathways, potentially leading to differential outcomes in magnitude and maintenance of change.

Recent predictive and structural studies further underscore the relevance of comparing these approaches. Research has demonstrated that alexithymia mediates the relationship between early maladaptive schemas and various maladaptive outcomes, including addiction, relational dysfunction, and academic

maladjustment (24-26). These findings suggest that interventions directly modifying schemas may exert broader and more stable effects on emotional functioning, particularly in populations with longstanding emotional suppression patterns. Conversely, ACT's emphasis on values-based living may be especially beneficial for individuals coping with chronic illness by enhancing meaning, resilience, and engagement despite persistent symptoms.

Given the high prevalence of alexithymia among women with MS, its documented negative impact on psychological well-being and disease adjustment, and the growing but fragmented evidence supporting schema therapy and ACT, a direct comparison of these interventions within this population is both theoretically and clinically warranted. Such comparative research can inform evidence-based intervention selection, optimize therapeutic outcomes, and contribute to the refinement of psychological care models for women living with MS.

Accordingly, the present study aimed to compare the effectiveness of schema therapy and acceptance and commitment therapy on alexithymia in women with multiple sclerosis.

Methods and Materials

Study Design and Participants

The present study was conducted with the aim of determining and comparing the effectiveness of schema therapy and acceptance and commitment therapy on alexithymia and experiential avoidance in women diagnosed with multiple sclerosis. In terms of purpose, the research was applied, and with respect to the method of implementation, it followed a semi-experimental design. The study employed a pretest–posttest–follow-up design with a control group, allowing for the examination of both immediate and sustained effects of the interventions over time. Within this framework, two experimental groups received structured psychological interventions—schema therapy and acceptance and commitment therapy—while the control group received no psychological intervention during the study period.

The research included three independent groups: a schema therapy group, an acceptance and commitment therapy group, and a control group. Each group consisted of fifteen women with a confirmed diagnosis of multiple sclerosis, yielding a total sample size of forty-five participants. After confirming eligibility based on predefined inclusion and exclusion criteria, participants were randomly assigned to the three groups using simple randomization. This random allocation was implemented after baseline assessment to reduce selection bias and to ensure comparability across groups at the outset of the study.

The statistical population comprised all women with multiple sclerosis who referred to the Tehran Multiple Sclerosis Society during the period from 2024 to 2025. The Tehran Multiple Sclerosis Society does not publish detailed short-term attendance statistics; therefore, the exact size of the accessible population was not available. However, according to official reports from the society, approximately 36,500 individuals with multiple sclerosis have been registered in Tehran to date, nearly three-quarters of whom are women. In addition, national reports indicate that around 6,500 new cases of multiple sclerosis are identified annually in Iran, with nearly one-third occurring in Tehran. Based on these figures, it was estimated that approximately 1,000 women with multiple sclerosis referred to the Tehran society during the 2024–2025 period. Accordingly, the target population of the present study was considered an accessible and limited

population drawn from this group, selected due to the feasibility of access and the high prevalence of multiple sclerosis among women.

Sampling was conducted using an available sampling method among eligible referrals. Following an initial screening based on inclusion and exclusion criteria, forty-five women who met the conditions and expressed willingness to participate were enrolled in the study. Inclusion criteria consisted of being female, being between 25 and 40 years of age, having a definite diagnosis of multiple sclerosis confirmed by a neurologist, and not having any severe psychiatric disorders requiring immediate intervention. Eligibility was further verified through a structured or semi-structured clinical interview to rule out acute psychiatric conditions and to confirm suitability for participation. Participants were also required to have sufficient physical and psychological capacity to attend the intervention sessions regularly, not to be concurrently engaged in other similar psychological treatments, and to provide informed consent for participation.

Exclusion criteria included the presence of severe psychiatric disorders such as schizophrenia, absence from more than two therapeutic sessions, voluntary withdrawal from the study at any stage, failure to complete the questionnaires at any assessment point, simultaneous participation in other comparable psychological interventions, and significant deterioration in medical condition that would prevent continued participation. These criteria were applied to maintain the internal validity of the study and to ensure participant safety throughout the intervention process.

Measures

Data were collected using the Toronto Alexithymia Scale, a widely used and psychometrically robust instrument developed by Bagby, Parker, and Taylor in 1994 to assess difficulties in emotional processing and regulation. This self-report questionnaire consists of twenty items distributed across three subscales: difficulty identifying feelings, comprising seven items; difficulty describing feelings, comprising five items; and externally oriented thinking, comprising eight items. Responses are rated on a five-point Likert scale ranging from "strongly disagree" to "strongly agree," yielding total scores between 20 and 100, with higher scores indicating higher levels of alexithymia. Several items are reverse-scored, and a total score of 61 is commonly used as a clinical cut-off point in research settings. The reliability of the Toronto Alexithymia Scale has been reported as satisfactory in numerous international and Iranian studies. Original validation studies reported Cronbach's alpha coefficients ranging from 0.75 to 0.86, and Iranian research has demonstrated acceptable internal consistency for the total scale. Test−retest reliability over intervals of two to six weeks has also been reported to be adequate, indicating good temporal stability. Regarding validity, the face and content validity of the scale have been confirmed by experts in psychology and psychiatry, and confirmatory factor analyses in international studies have supported its three-factor structure, despite some cultural variations in factor loadings for externally oriented thinking. Convergent validity evidence indicates positive associations with depression, anxiety, and rumination, and negative associations with mindfulness and emotional competence. In the present sample, internal consistency was calculated separately for each assessment phase, with Cronbach's alpha coefficients indicating lower reliability at pretest and substantially higher reliability at posttest and follow-up, reflecting improved internal coherence of responses over time.

Interventions

The schema therapy intervention in the present study was implemented based on the schema therapy model developed by Young and colleagues and adapted according to a structured research protocol. The intervention was delivered in ten group sessions, each lasting ninety minutes, with the overarching goal of enhancing participants' cognitive and emotional insight into early maladaptive schemas, facilitating schema modification, and improving behavioral and interpersonal patterns. The initial sessions focused on establishing the therapeutic alliance, clarifying treatment goals and structure, administering baseline assessments, and introducing the core concepts of schemas and their developmental origins. Subsequent sessions emphasized the identification of dominant maladaptive schemas through guided self-reflection and standardized schema assessment, followed by systematic training in recognizing schema activation in everyday situations. Cognitive techniques such as cognitive restructuring were employed to challenge and modify dysfunctional schema-driven beliefs, while experiential techniques targeted the emotional components of schemas, including difficulties in emotional awareness and expression. Behavioral pattern-breaking strategies were gradually introduced through in-session role-playing and between-session behavioral assignments aimed at replacing maladaptive coping responses with more adaptive behaviors. Later sessions addressed stress management, coping skills enhancement, and mindfulness-based exercises to increase emotional regulation capacity. Interpersonal functioning was also a central focus, with sessions devoted to analyzing relational patterns and strengthening communication skills. The final sessions concentrated on relapse prevention, consolidation of learned techniques, future planning, post-intervention assessment, and mutual feedback, thereby supporting the maintenance of therapeutic gains beyond the intervention period.

The acceptance and commitment therapy intervention was conducted in accordance with the ACT model proposed by Hayes and colleagues and followed a structured research protocol specifically adapted for group implementation. This intervention consisted of ten group sessions of ninety minutes each and was designed to reduce experiential avoidance while enhancing psychological flexibility through acceptance, mindfulness, values clarification, and committed action. The initial session focused on introducing the ACT framework, establishing a therapeutic relationship, clarifying expectations and treatment goals, administering baseline assessments, and exploring participants' initial patterns of emotional avoidance. Early sessions emphasized increasing awareness of experiential avoidance and its impact on quality of life through self-observation exercises and group discussions. Participants were then guided to develop acceptance skills, learning to relate differently to distressing thoughts and emotions through nonjudgmental openness rather than control or suppression. Mindfulness practices were progressively introduced to cultivate present-moment awareness and sensory engagement, strengthening the ability to remain psychologically present despite internal discomfort. Mid-intervention sessions were dedicated to clarifying personal values and translating these values into meaningful life directions, followed by structured planning of value-consistent actions. Cognitive defusion techniques were used to reduce the literal impact of negative thoughts by fostering an observer stance toward internal experiences. Additional sessions reinforced the concept of the self as context, enabling participants to experience a stable sense of self beyond transient thoughts and emotions. The final phase of the intervention focused on reviewing and integrating acquired skills, addressing challenges

encountered during implementation, evaluating progress through post-intervention assessment, and developing individualized plans for sustaining value-based actions in daily life.

Data Analysis

Data analysis was performed using SPSS software, version 26. At the descriptive level, means, standard deviations, and frequency distributions were computed to summarize demographic characteristics and outcome variables. At the inferential level, the primary analyses for each outcome variable were conducted using repeated-measures analysis of covariance. In these models, group membership served as the between-subjects factor, time as the within-subjects factor, and the corresponding pretest score was entered as a covariate to control for baseline differences. Main effects of group and time, as well as the group-by-time interaction, were examined to evaluate differential treatment effects across assessment points.

Adjusted means with 95 percent confidence intervals were reported, and pairwise comparisons at each time point were conducted using Tukey's HSD procedure based on adjusted means. To examine the two outcome variables simultaneously at posttest and follow-up, multivariate analysis of covariance was also performed, controlling for the corresponding pretest scores. All statistical tests were two-tailed, the level of significance was set at 0.05, and effect sizes were reported using partial eta squared to facilitate interpretation of the magnitude of observed effects.

Findings and Results

The demographic characteristics of the participants indicated a high degree of comparability across the three study groups. The mean age of participants in the schema therapy group was 32.6 years with a standard deviation of 4.1, in the acceptance and commitment therapy group 32.4 years with a standard deviation of 4.3, and in the control group 32.5 years with a standard deviation of 4.2, with an overall sample mean age of 32.5 years ranging from 25 to 40 years. The mean duration of multiple sclerosis was 6.1 years with a standard deviation of 2.7 in the schema therapy group, 5.9 years with a standard deviation of 2.9 in the acceptance and commitment therapy group, and 6.0 years with a standard deviation of 2.8 in the control group, yielding an overall mean disease duration of 6.0 years with a range of 2 to 12 years. Regarding educational attainment, 20 percent of the total sample held a high school diploma, 51 percent had a bachelor's degree, and 29 percent had a master's degree, with similar distributions observed across the three groups. In terms of marital status, 40 percent of participants were single and 60 percent were married, and this pattern was consistent across all groups, indicating balanced demographic profiles among the schema therapy, acceptance and commitment therapy, and control conditions.

Table 1. Descriptive Statistics of Alexithymia by Group and Time (M ± SD)

Time Point	Schema Therapy	Acceptance and Commitment Therapy	Control	Total Sample
Pretest	62.3 ± 5.4	64.7 ± 6.2	64.1 ± 4.3	63.7 ± 5.3
Posttest	20.4 ± 1.3	24.3 ± 3.6	26.5 ± 4.0	23.8 ± 4.0
Follow-up	20.2 ± 0.6	25.9 ± 5.2	26.4 ± 4.0	24.2 ± 4.7

The descriptive statistics presented in Table 1 show the mean levels of alexithymia across the three groups at pretest, posttest, and follow-up. At baseline, mean alexithymia scores were relatively high and comparable across the schema therapy, acceptance and commitment therapy, and control groups, indicating similar

initial levels of emotional processing difficulties among participants. Following the interventions, a substantial reduction in alexithymia scores was observed in both experimental groups at posttest, with the most pronounced decrease evident in the schema therapy group. In contrast, the control group demonstrated a more modest reduction over the same period. At the follow-up assessment, the schema therapy group maintained its improvement with minimal change from posttest, whereas the acceptance and commitment therapy group showed a slight increase in mean scores, suggesting some attenuation of treatment effects over time. The control group's mean scores remained relatively stable between posttest and follow-up. Overall, the pattern of means indicates greater and more sustained reductions in alexithymia for participants who received schema therapy compared with acceptance and commitment therapy and no intervention.

Prior to conducting the inferential analyses, the underlying statistical assumptions were systematically examined and confirmed to be satisfactory. The normality of the distribution of alexithymia scores at each measurement point was assessed using both graphical methods and normality tests, and the results indicated no meaningful deviations from normality. Homogeneity of variances across the three groups was evaluated and supported, demonstrating that the assumption of equal error variances was met. The assumption of homogeneity of regression slopes was also tested and confirmed, indicating that the relationship between the covariate (pretest scores) and the dependent variable was consistent across groups. In addition, the sphericity assumption for repeated measures was examined and found to be acceptable, or appropriately adjusted where necessary, ensuring the validity of within-subject comparisons over time. No influential outliers or multicollinearity issues were detected, and the independence of observations was ensured through the study design. Collectively, these findings supported the appropriateness of applying repeated-measures analysis of covariance and multivariate analysis of covariance for hypothesis testing in the present study.

Table 2. ANCOVA Results for Alexithymia at Follow-Up (Classical Estimates)

Outcome Variable	Effect	df	F (Classical)	p (Classical)	Partial η²
Alexithymia	Group	2, 41	100.407	< 0.001	0.830

The results of the classical analysis of covariance conducted on follow-up alexithymia scores indicated a statistically significant main effect of group after controlling for pretest scores. The magnitude of the effect was very large, with the group factor accounting for approximately 83 percent of the variance in follow-up alexithymia scores. This finding demonstrates that the type of intervention received had a substantial impact on alexithymia outcomes at follow-up.

Table 3. ANCOVA Results for Alexithymia at Follow-Up Using HC3 Robust Estimation

Outcome Variable	Effect	df	F (HC3)	p (HC3)	Partial η²
Alexithymia	Group	2, 41	109.345	< 0.001	0.830

To ensure robustness against potential heteroscedasticity, the ANCOVA was re-estimated using HC3 robust standard errors. The results remained statistically significant, with an even larger F value observed under the HC3 correction. The consistency between classical and robust estimates confirms the stability of the group effect and indicates that the observed differences in alexithymia at follow-up were not attributable to violations of variance assumptions.

Table 4. Tukey HSD Post-Hoc Comparisons for Alexithymia at Follow-Up (Lower Scores Indicate Improvement)

Group 1	Group 2	Mean Difference	95% CI	Adjusted p	Interpretation
Schema Therapy	Acceptance and Commitment Therapy	−6.666	−8.935 to −4.397	< 0.001	Significant
Schema Therapy	Control	−13.527	−15.796 to −11.258	< 0.001	Significant
Acceptance and Commitment Therapy	Control	−6.861	−9.130 to −4.592	< 0.001	Significant

Post-hoc comparisons using Tukey's HSD test revealed statistically significant differences between all pairs of groups at the follow-up stage. Participants in the schema therapy group demonstrated significantly lower alexithymia scores compared with both the acceptance and commitment therapy group and the control group. Additionally, the acceptance and commitment therapy group showed significantly lower alexithymia scores than the control group. These findings indicate a clear hierarchical pattern of effectiveness, with schema therapy producing the greatest reduction in alexithymia, followed by acceptance and commitment therapy, and then the control condition.

Table 5. Summary of Group Effects on Alexithymia at Follow-Up

Comparison Dimension	Schema Therapy	Acceptance and Commitment Therapy	Control
Direction of Change	Strong decrease	Moderate decrease	Minimal change
Maintenance at Follow-Up	Fully maintained	Partially maintained	Stable
Relative Effectiveness	Highest	Intermediate	Lowest

The overall pattern of results across analyses demonstrates that schema therapy yielded the most pronounced and durable reductions in alexithymia at follow-up, while acceptance and commitment therapy produced moderate but statistically significant improvements relative to the control group. The control condition showed minimal change over time. Collectively, these findings indicate that although both psychological interventions were effective, schema therapy was superior in both magnitude and stability of therapeutic outcomes for alexithymia in women with multiple sclerosis.

Discussion and Conclusion

The present study aimed to compare the effectiveness of schema therapy and acceptance and commitment therapy in reducing alexithymia among women with multiple sclerosis, using a controlled semi-experimental design with posttest and follow-up assessments. The findings demonstrated that both therapeutic approaches led to significant reductions in alexithymia compared with the control condition, confirming the overall efficacy of psychological interventions targeting emotional processing difficulties in this clinical population. However, the magnitude and stability of change differed between the two interventions. Schema therapy produced the greatest reduction in alexithymia at posttest and maintained these gains more consistently at follow-up, whereas acceptance and commitment therapy, although effective, showed comparatively smaller reductions and a slight attenuation of effects over time. These results suggest that while both approaches are beneficial, schema therapy may exert a stronger and more enduring impact on alexithymia in women with multiple sclerosis.

The overall reduction in alexithymia observed in both intervention groups is consistent with a growing body of literature emphasizing the modifiability of emotional awareness and expression through structured

psychological treatments. Prior research has shown that alexithymia is not a fixed personality trait but a dynamic construct influenced by cognitive, emotional, and relational processes that can be altered through targeted interventions (13, 15, 21). In the context of multiple sclerosis, where emotional dysregulation is compounded by neurological changes and chronic stress, the present findings reinforce the value of incorporating emotion-focused psychotherapies into comprehensive care models (1, 2). The significant group effects observed at follow-up further indicate that psychological interventions can produce sustained emotional benefits beyond immediate symptom relief.

The superior effectiveness of schema therapy in the present study can be interpreted in light of its theoretical foundations and therapeutic mechanisms. Schema therapy directly targets early maladaptive schemas that underlie chronic emotional suppression, impaired emotional awareness, and rigid coping styles. Empirical studies have consistently documented strong associations between maladaptive schemas—particularly emotional deprivation, emotional inhibition, defectiveness, and abandonment—and alexithymia (5-7). By focusing on the identification, experiential activation, and restructuring of these schemas, schema therapy may facilitate deeper emotional insight and more fundamental changes in emotional processing. This mechanism likely explains the more pronounced and stable reductions in alexithymia observed in the schema therapy group.

The present findings are closely aligned with previous studies demonstrating the effectiveness of schema therapy in reducing alexithymia across diverse female clinical populations. Research conducted on women experiencing domestic violence, persistent depressive disorder, and relational dysfunctions has shown that schema therapy not only reduces alexithymia but also improves emotional self-disclosure, interpersonal functioning, and psychological well-being (10-12). Structural and mediational studies further suggest that improvements in alexithymia following schema-based interventions are often mediated by changes in core schemas and emotion-related beliefs, supporting the notion that schema therapy addresses the root cognitive–emotional structures sustaining alexithymia (9). In women with multiple sclerosis, whose emotional difficulties may be exacerbated by long-standing schemas activated by illness-related stress, such deep-level interventions appear particularly beneficial.

Acceptance and commitment therapy also yielded significant reductions in alexithymia compared with the control group, confirming its effectiveness as an intervention for emotional processing difficulties. ACT conceptualizes alexithymia primarily through the lens of experiential avoidance and psychological inflexibility, positing that individuals disengage from emotional awareness in an effort to control or avoid distressing internal experiences. By cultivating acceptance, mindfulness, and cognitive defusion, ACT enables individuals to relate differently to emotions rather than attempting to suppress or analyze them. Previous studies have consistently shown that ACT reduces alexithymia in women with various psychological and medical conditions, including diabetes, rheumatic diseases, and relational distress (14, 15, 21).

In populations with multiple sclerosis, ACT has been shown to reduce alexithymia while simultaneously improving fatigue, depression, and emotional stability, highlighting its transdiagnostic utility (3, 4). The present findings are consistent with this evidence, demonstrating that ACT can effectively enhance emotional awareness and reduce emotional avoidance in women with MS. However, the slightly weaker and less stable effects observed at follow-up suggest that while ACT facilitates functional engagement with

emotions, it may exert a more indirect influence on the structural emotional deficits characteristic of alexithymia.

The observed differences between schema therapy and ACT may be explained by their distinct therapeutic emphases. Schema therapy explicitly encourages emotional exploration, labeling, and expression through experiential techniques such as imagery, chair work, and emotion-focused dialogues. These techniques directly address the core components of alexithymia, namely difficulty identifying and describing feelings. In contrast, ACT deliberately de-emphasizes emotional labeling and analysis, focusing instead on acceptance and values-based action. While this approach reduces emotional avoidance and distress, it may not sufficiently enhance emotional differentiation and verbalization in individuals with severe alexithymic traits, particularly over the long term. This distinction has been noted in comparative studies, where schema-based or emotion-focused interventions often demonstrate stronger effects on emotional insight, whereas ACT shows greater impact on functional outcomes and psychological flexibility (17-20).

The stability of schema therapy effects at follow-up is particularly noteworthy, as it suggests that modifying early maladaptive schemas may lead to enduring changes in emotional processing. This finding aligns with longitudinal and predictive research indicating that schemas play a central role in the persistence of alexithymia and related maladaptive outcomes across the lifespan (24-26). By weakening the influence of these schemas, schema therapy may reduce the likelihood of relapse into emotional suppression patterns, even in the face of ongoing illness-related stress.

Taken together, the findings of the present study contribute to the growing evidence base supporting psychological interventions for alexithymia in women with multiple sclerosis and highlight the differential strengths of schema therapy and acceptance and commitment therapy. Both approaches appear effective, but schema therapy may be particularly advantageous when the therapeutic goal is deep and sustained improvement in emotional awareness and expression. These results underscore the importance of tailoring psychological interventions to the specific emotional and cognitive profiles of individuals with chronic neurological conditions.

Despite its contributions, the present study has several limitations that should be acknowledged. First, the sample size was relatively small and limited to women referring to a single multiple sclerosis association, which may restrict the generalizability of the findings. Second, reliance on self-report measures may have introduced response biases, particularly given the nature of alexithymia, which involves limited emotional awareness. Third, although a follow-up assessment was included, the duration of follow-up was relatively short, limiting conclusions about long-term maintenance of treatment effects. Finally, potential confounding variables such as disease severity, medication type, and social support were not systematically controlled.

Future studies are encouraged to replicate these findings with larger and more diverse samples, including men with multiple sclerosis and individuals from different cultural or clinical settings. Longer follow-up periods would provide more robust evidence regarding the durability of treatment effects. Incorporating multimethod assessment approaches, such as clinician ratings or behavioral measures of emotional processing, could strengthen the validity of findings. Additionally, future research could explore integrative or sequential intervention models that combine schema therapy and acceptance-based techniques to maximize therapeutic outcomes.

From a clinical perspective, the findings highlight the importance of assessing alexithymia in women with multiple sclerosis as part of routine psychological evaluation. Mental health professionals working with this population should consider incorporating schema-focused or acceptance-based interventions into treatment planning, depending on individual needs and therapeutic goals. Schema therapy may be particularly suitable for clients with long-standing emotional inhibition and maladaptive relational patterns, whereas acceptance and commitment therapy may be beneficial for those struggling with emotional avoidance and illness-related distress. Integrating psychological interventions into multidisciplinary MS care programs may enhance overall well-being and improve long-term adjustment to the disease.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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