

# The Effectiveness of Positive Thinking Skills on Guilt Feelings, Rumination, and Hope for Life in the Elderly

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Article type:  
Original Research

Article history:  
Received 30 December 2025  
Revised 09 April 2026  
Accepted 15 April 2026  
Initial Publish 03 May 2026  
Published online 01 July 2026

## ABSTRACT

The present study aimed to examine the effectiveness of positive thinking skills on guilt feelings, rumination, and hope for life among elderly individuals in the city of Qaemshahr. Based on its objective, the study is applied in nature. The research design was quasi-experimental, employing a pretest–posttest format with a control group. The statistical population included all elderly residents of Qaemshahr who were living in nursing homes. A total of 30 participants were selected and randomly assigned to experimental and control groups; to control for group effects, both groups were selected from the same nursing home. Data were collected using the Snyder Hope Scale (Snyder, 1991), the Ruminative Responses Scale developed by Nolen-Hoeksema and Morrow (Nolen-Hoeksema & Morrow, 1991), and the Guilt Inventory by Kugler and Jones (Kugler & Jones, 1992) at two stages, pretest and posttest. The intervention consisted of the Susan Quilliam protocol, translated by Barati and Sadeghi (2011), along with the book *The Optimistic Child* by Martin Seligman et al., translated by Davarpanah (2012), administered over 10 sessions of 90 minutes each across 10 weeks. Data were analyzed using univariate and multivariate analysis of covariance (ANCOVA and MANCOVA). The results indicated that positive thinking skills had a significant effect on guilt feelings, rumination, and hope for life. The largest effect size was observed for hope for life (55%), followed by guilt feelings (approximately 44%), and rumination (35%). Based on the findings, the implementation of positive thinking training programs appears necessary for reducing rumination and guilt while enhancing hope for life among the elderly.

**Keywords:** Positive thinking skills, guilt feelings, hope for life, rumination

### How to cite this article:

Mohammadpour, M., & Esmailnia Ghara, M. (2026). The Effectiveness of Positive Thinking Skills on Guilt Feelings, Rumination, and Hope for Life in the Elderly. *Mental Health and Lifestyle Journal*, 4(4), 1-12. <https://doi.org/10.61838/mhlj.210>

## Introduction

Population aging is one of the most significant demographic transformations of the 21st century, posing substantial psychological, social, and healthcare challenges across societies. The rapid increase in the elderly population has drawn attention to the need for improving psychological well-being and quality of life in later adulthood, particularly given the increased vulnerability of older adults to emotional distress, chronic illness, and social isolation (1). Aging is often accompanied by multiple stressors, including loss of social roles, bereavement, declining physical health, and reduced autonomy, all of which may contribute to the emergence of psychological difficulties such as depression, anxiety, guilt, and maladaptive cognitive patterns (2, 3). Consequently, identifying effective psychological interventions that can enhance adaptive functioning and emotional resilience in older adults has become a critical priority in both clinical and research domains.

Among the various psychological constructs relevant to aging, hope for life has been widely recognized as a central component of well-being and psychological adjustment. Hope is conceptualized as a cognitive-motivational system involving agency (goal-directed energy) and pathways (planning to achieve goals), which enables individuals to maintain a sense of purpose and optimism in the face of adversity (4). Empirical evidence suggests that higher levels of hope are associated with better mental health outcomes, improved coping strategies, and enhanced life satisfaction among older adults (5, 6). Conversely, diminished hope is closely linked to despair, reduced motivation, and increased vulnerability to psychological disorders, highlighting the importance of interventions aimed at strengthening hope as a protective factor in late adulthood (7).

In contrast to adaptive constructs such as hope, maladaptive cognitive processes like rumination have been identified as key contributors to emotional distress. Rumination refers to repetitive and passive focus on negative thoughts, feelings, and experiences, often leading to the maintenance and exacerbation of depressive and anxious symptoms (8). Studies have shown that rumination is significantly associated with internalizing problems and psychological maladjustment across different populations, including older adults (9, 10). Moreover, rumination has been linked to a wide range of negative outcomes, such as impaired problem-solving, increased stress, and reduced emotional regulation capacity (11). In the context of aging, rumination may be particularly problematic due to increased exposure to life stressors and reduced cognitive flexibility, which can hinder adaptive coping mechanisms (12, 13). Therefore, interventions that can effectively reduce rumination are essential for promoting psychological health in the elderly.

Another important psychological construct in late adulthood is guilt, which is defined as a self-conscious emotion arising from perceived moral transgressions or failures to meet personal or societal standards (14). While moderate levels of guilt may serve adaptive functions by promoting moral behavior and social responsibility, excessive or chronic guilt is associated with a range of psychological problems, including anxiety, depression, and reduced well-being (15). In older adults, guilt may be intensified by existential concerns, unresolved life regrets, and reflections on past experiences, contributing to emotional distress and diminished life satisfaction (16). Given its significant impact on mental health, addressing maladaptive guilt is a crucial component of psychological interventions for the elderly.

The interrelationships among hope, rumination, and guilt highlight the importance of targeting cognitive and emotional processes in interventions aimed at improving mental health in older adults. Previous research has demonstrated that negative cognitive patterns, such as rumination and maladaptive beliefs, are closely associated with reduced self-efficacy and increased psychological distress (17). Furthermore, emotional states such as guilt and worry are influenced by underlying metacognitive beliefs, suggesting that modifying cognitive processes can lead to significant improvements in emotional well-being (13). These findings underscore the potential effectiveness of cognitive-behavioral and positive psychological approaches in addressing the psychological challenges faced by older adults.

Positive thinking skills training, grounded in the principles of positive psychology and cognitive-behavioral theory, has emerged as a promising intervention for enhancing psychological well-being. This approach focuses on fostering adaptive cognitive patterns, increasing optimism, promoting positive emotions, and strengthening coping strategies (18, 19). Positive thinking interventions aim to help individuals identify and challenge negative thoughts, develop constructive thinking habits, and cultivate a

more optimistic outlook on life. Empirical studies have demonstrated the effectiveness of such interventions in reducing anxiety, depression, and psychological distress while enhancing life satisfaction and emotional resilience (18, 20). In older adults, positive psychological interventions have been shown to improve mental health outcomes and promote successful aging by enhancing adaptive coping mechanisms and emotional regulation (21).

In addition to improving emotional well-being, positive thinking skills may also play a crucial role in enhancing hope and reducing maladaptive cognitive processes such as rumination. By encouraging individuals to focus on strengths, opportunities, and solutions rather than problems and limitations, positive thinking interventions can increase goal-directed motivation and perceived control over life circumstances (4). Furthermore, these interventions can help individuals develop more flexible and adaptive thinking patterns, thereby reducing the tendency to engage in repetitive negative thinking (8). Evidence also suggests that positive thinking can mitigate feelings of guilt by promoting self-compassion, forgiveness, and acceptance, which are essential for psychological well-being in later life (16).

Despite the growing body of research on positive psychological interventions, there remains a need for further investigation into their effectiveness in specific populations, particularly elderly individuals residing in institutional settings. Older adults living in nursing homes may face unique challenges, including reduced social support, limited autonomy, and increased feelings of loneliness, which can exacerbate psychological distress and hinder well-being (3). Moreover, cultural and contextual factors may influence the effectiveness of psychological interventions, highlighting the importance of conducting research in diverse settings to ensure the generalizability of findings (22). In this regard, examining the impact of positive thinking skills training on key psychological variables such as hope, rumination, and guilt among elderly populations in specific cultural contexts is of significant importance.

Previous studies have provided preliminary evidence supporting the effectiveness of cognitive and positive interventions in reducing psychological distress and enhancing well-being. For example, cognitive-existential approaches have been shown to reduce depressive symptoms by addressing existential concerns and promoting meaning-making processes (23). Similarly, interventions targeting cognitive processes have demonstrated effectiveness in reducing anxiety and improving emotional regulation (19). However, relatively few studies have simultaneously examined the impact of positive thinking skills on multiple psychological outcomes, such as hope, rumination, and guilt, particularly in elderly populations. This gap in the literature highlights the need for comprehensive research that integrates multiple psychological constructs within a single intervention framework.

In summary, the increasing prevalence of psychological challenges among older adults necessitates the development and evaluation of effective interventions that can enhance well-being and reduce distress. Hope, rumination, and guilt represent key psychological constructs that significantly influence the mental health of elderly individuals, and addressing these variables through targeted interventions is essential for promoting successful aging. Positive thinking skills training, as an integrative approach grounded in positive psychology and cognitive-behavioral principles, holds considerable promise for improving psychological outcomes in this population. Therefore, the aim of the present study is to examine the effectiveness of positive thinking skills on guilt, rumination, and hope for life among elderly individuals.

## Methods and Materials

### *Study Design and Participants*

The present study is applied in terms of its objective. It is an experimental study of a quasi-experimental type with a pretest–posttest design including a control group. The study population consisted of elderly men and women residing in the MehrPouya Daytime Rehabilitation and Educational Center in Qaemshahr. From this population, 30 individuals were selected using convenience sampling and were randomly assigned to two groups: an experimental group (positive thinking skills) with 15 participants and a control group with 15 participants. Given that the 30 participants were selected through convenience sampling and randomly allocated into two groups, they were considered homogeneous in terms of gender and age. Inclusion criteria included willingness to participate in the study, literacy, absence of sensory impairments, age 60 years and above, and no history of physical or psychological disorders. Exclusion criteria included the presence of severe mental disorders (e.g., dementia, Alzheimer’s disease, schizophrenia, severe depression), absence from more than two sessions, incomplete questionnaire responses, lack of bereavement experience (death of close relatives), failure to complete assigned tasks, and not meeting the inclusion criteria.

### *Data Collection*

The Hope Scale questionnaire was developed by Snyder, Harris, Anderson, Holleran, Irving, and colleagues (1991) and consists of 12 items designed to assess individuals’ level of hope for life. It is scored using a five-point Likert scale and is intended for individuals aged 15 years and older. Of the items, four assess agency thinking (items 2, 9, 10, and 12), four assess pathways thinking (items 1, 4, 7, and 8), and four are distractor items (items 3, 5, 6, and 11). Therefore, this questionnaire measures two subscales: agency and pathways. The validity and reliability of this scale in Iran were confirmed by Alaeeddini (2008). Snyder et al. reported the reliability of the questionnaire using Cronbach’s alpha (0.84) and test–retest reliability over a 10-week interval (0.80).

The standardized Ruminative Responses Scale was developed by Nolen-Hoeksema and Morrow (1991) to assess rumination. This questionnaire consists of 22 items and uses a four-point Likert scale, including items such as “You try to analyze your personality to understand why you are depressed.” Scores between 22 and 33 indicate low rumination, scores between 33 and 55 indicate moderate rumination, and scores above 55 indicate high rumination. Papageorgiou and Wells reported the reliability of this scale using Cronbach’s alpha ranging from 0.88 to 0.92 and an intraclass correlation coefficient of 0.75, indicating high reliability and validity. In a study conducted by Sana, Golshani, and colleagues (2021), the Cronbach’s alpha for this scale was reported as 0.90.

The standardized Guilt Inventory is a self-report instrument designed to assess feelings of guilt. This questionnaire was developed, completed, and revised by Kugler and Jones between 1988 and 1992. It consists of 45 items and three subscales. Scoring is based on a five-point Likert scale ranging from “strongly agree” (5) to “strongly disagree” (1). Scores between 45 and 75 indicate low guilt, scores between 75 and 150 indicate moderate guilt, and scores above 225 indicate high guilt. In Iran, the content and face validity of this questionnaire were confirmed by Naziri (1995). Test–retest reliability over a 10-week interval was reported as 0.81 for the moral standards subscale, 0.72 for guilt trait, and 0.56 for guilt state.

### Intervention

The positive thinking skills intervention consisted of a structured group-based training program implemented by the researcher over 10 consecutive weekly sessions, each lasting 90 minutes. The program focused on teaching a range of cognitive and behavioral skills associated with positive thinking, drawing on content adapted from Quilliam (2011) and Seligman et al. (2012). The intervention began with participant orientation, including introductions, establishment of group rules, and a general overview of thinking processes. Subsequent sessions introduced core concepts of positive thinking, identification of its indicators, and analysis of individual cognitive perspectives. Participants were then trained to challenge negative thoughts and modify maladaptive mental imagery. Emphasis was placed on the use of constructive language, reflective thinking about personal beliefs, and the maintenance of positive behaviors. Additional sessions focused on enhancing self-acceptance, self-respect, and recognition of internal negative dialogue. The program further addressed the development of optimism, positive affect, self-confidence, and goal setting. Emotional regulation skills were taught, including strategies for reducing guilt, managing anger, coping with anxiety, avoiding jealousy, and improving assertiveness. Participants were also trained in assertiveness techniques, including the ability to say “no” and manage life events effectively. The later sessions emphasized creating a positive environment, maintaining physical and psychological health, and fostering effective interpersonal relationships. Finally, participants were guided in developing coping strategies for everyday life challenges and improving their ability to regulate life events.

### Data Analysis

Data analysis was conducted in two sections. In the descriptive section, data were analyzed using descriptive indices such as tables, frequency distribution, mean, percentage, and standard deviation. For inferential analysis and hypothesis testing, parametric tests were used when data were normally distributed, and nonparametric tests were used when normality assumptions were not met. SPSS version 26 was employed to analyze the research hypotheses. Additionally, Levene’s test for equality of variances and Box’s M test for equality of covariance matrices were conducted to examine the statistical assumptions required for parametric tests. Subsequently, the research hypotheses were tested using univariate and multivariate analysis of covariance (ANCOVA and MANCOVA).

### Findings and Results

In the descriptive statistics section, demographic variables including gender, age, and education level among the elderly were examined and described across the two groups in terms of frequency distribution and percentages. The majority of participants were female, comprising 73.3% of the experimental group and 66.7% of the control group. In terms of age distribution, most participants in the experimental group (33.3%) and control group (53.3%) were in the 75–80 years age range. Regarding educational level, the majority of participants in both the experimental group (46.7%) and the control group (46.7%) had primary education.

**Table 1. Descriptive Statistics of the Main Research Variables**

Group	Time	Variable	Subscale	Min	Max	Mean	SD
Experimental	Pretest	Hope for Life	Agency Thinking	9	12	10.07	0.79

Experimental	Posttest	Rumination	Pathways Thinking	11	16	13.40	1.95
			Total Hope	21	28	23.47	2.32
			Brooding	15	22	18.33	2.82
			Reflection	16	23	19.53	2.20
			Depression	41	55	47.73	4.00
		Total Rumination	72	95	85.60	5.77	
		Guilt	Guilt Trait	42	59	49.33	5.85
			Guilt State	42	63	51.47	7.79
			Moral Standards	50	65	56.53	5.76
			Total Guilt	143	171	157.33	9.02
	Agency Thinking		10	15	12.47	1.84	
	Pretest	Hope for Life	Pathways Thinking	10	18	14.40	2.29
			Total Hope	23	31	26.87	2.53
			Brooding	12	20	15.53	2.90
			Reflection	14	20	17.00	2.20
			Depression	35	49	42.93	4.87
		Total Rumination	66	84	75.47	4.96	
		Guilt	Guilt Trait	40	54	45.13	4.94
			Guilt State	38	54	44.53	5.52
			Moral Standards	45	58	50.13	4.00
Total Guilt			128	153	139.80	7.08	
Agency Thinking	9		12	10.80	1.10		
Control	Pretest	Hope for Life	Pathways Thinking	9	16	10.87	2.13
			Total Hope	18	25	21.67	2.09
			Brooding	14	22	17.53	2.94
			Reflection	16	21	18.67	1.71
			Depression	40	52	46.47	4.50
		Total Rumination	73	87	82.67	4.03	
		Guilt	Guilt Trait	45	58	49.20	4.07
			Guilt State	45	63	56.20	5.83
			Moral Standards	47	64	53.40	4.42
			Total Guilt	147	167	158.80	6.58
	Agency Thinking		8	13	10.40	1.99	
	Posttest	Hope for Life	Pathways Thinking	10	15	12.53	1.76
			Total Hope	18	27	22.93	2.43
			Brooding	15	21	17.67	2.19
			Reflection	16	22	19.27	2.05
			Depression	39	54	47.53	4.76
		Total Rumination	77	92	84.47	5.04	
		Guilt	Guilt Trait	44	62	51.67	6.29
			Guilt State	40	61	51.33	7.69
			Moral Standards	44	64	52.73	5.47
Total Guilt			128	171	158.73	11.17	
Agency Thinking	8		13	10.40	1.99		

The results indicate that the mean score of hope for life in the experimental group increased from 23.47 in the pretest to 26.87 in the posttest, demonstrating an improvement, whereas in the control group the mean increased only slightly from 21.67 to 22.93, indicating minimal change. Regarding rumination, the mean score in the experimental group decreased from 85.60 in the pretest to 75.47 in the posttest, suggesting a reduction following the intervention, whereas in the control group the mean increased slightly from 82.67 to 84.47, indicating no meaningful change. For guilt, the mean score in the experimental group decreased from 157.33 in the pretest to 139.80 in the posttest, while in the control group the mean remained virtually unchanged (158.80 to 158.73).

Prior to conducting the main analyses, the statistical assumptions underlying parametric tests were examined. The normality of the distribution of the main variables (hope for life, rumination, and guilt) at both pretest and posttest stages was assessed using the Shapiro–Wilk test, and the results indicated that all

significance values were greater than 0.05, confirming that the data were normally distributed. The assumption of homogeneity of variances was evaluated using Levene's test; the results demonstrated that this assumption was met for the components of hope for life and rumination ( $p > 0.05$ ), whereas for the subscales of guilt, some significance values were below 0.05, suggesting partial violation of variance homogeneity; however, given the robustness of ANCOVA to minor violations and the balanced group sizes, the analysis proceeded. Furthermore, the homogeneity of covariance matrices was assessed using Box's M test, and the non-significant results ( $p > 0.05$ ) indicated that this assumption was satisfied. Overall, the findings supported the adequacy of the data for conducting univariate and multivariate analyses of covariance.

**Table 2. ANCOVA Results for the Effect of Positive Thinking Skills on Guilt, Rumination, and Hope for Life**

Source	Variable	SS	MS	F	p	$\eta^2$
Group	Hope for Life	232.246	232.246	30.783	0.000	0.552
	Rumination	370.568	370.568	13.432	0.001	0.349
	Guilt	1741.845	1741.845	19.634	0.000	0.440
Error	Hope for Life	188.614	7.545			
	Rumination	689.728	27.589			
	Guilt	2217.891	88.716			
Total	Hope for Life	21294				
	Rumination	193149				
	Guilt	673554				

Table 2 presents the results of the analysis of covariance examining the effect of positive thinking skills on guilt, rumination, and hope for life among the elderly. The significance levels for all three main variables were 0.000, indicating statistical significance at the 0.05 level. Therefore, it can be concluded that positive thinking skills had a significant effect on guilt, rumination, and hope for life. The largest effect size was observed for hope for life ( $\eta^2 = 0.552$ ), followed by guilt ( $\eta^2 = 0.440$ ), and rumination ( $\eta^2 = 0.349$ ), confirming the main research hypothesis.

**Table 3. Bonferroni Post Hoc Comparison of Mean Differences**

Variable	Group	Mean	Comparison	Mean Difference	p
Hope for Life	Experimental	29.699	Exp vs. Ctrl	6.732*	0.000
	Control	22.968	Ctrl vs. Exp	-6.732*	0.000
Rumination	Experimental	75.715	Exp vs. Ctrl	-8.503*	0.001
	Control	84.218	Ctrl vs. Exp	8.503*	0.001
Guilt	Experimental	140.049	Exp vs. Ctrl	-18.435*	0.000
	Control	158.484	Ctrl vs. Exp	18.435*	0.000

Table 3 presents the results of Bonferroni post hoc comparisons of the variables. The findings indicate that the two groups differed significantly in hope for life (mean difference = 6.73), rumination (mean difference = 8.50), and guilt (mean difference = 18.43) at the 0.05 significance level. Specifically, the mean score of hope for life in the experimental group increased after the intervention compared to the control group, whereas the mean scores of rumination and guilt decreased.

## Discussion and Conclusion

The present study aimed to investigate the effectiveness of positive thinking skills on guilt, rumination, and hope for life among elderly individuals. The findings demonstrated that the intervention had a

statistically significant effect on all three variables. Specifically, the results indicated that positive thinking skills training significantly increased hope for life while simultaneously reducing levels of rumination and guilt in the experimental group compared to the control group. Moreover, the effect size analysis revealed that the strongest impact of the intervention was on hope for life, followed by guilt and rumination, respectively. These findings provide empirical support for the effectiveness of positive cognitive-behavioral interventions in enhancing psychological well-being among older adults and are consistent with theoretical expectations derived from positive psychology frameworks.

The observed increase in hope for life among participants in the experimental group can be explained through the theoretical lens of hope theory, which emphasizes the role of agency and pathways thinking in goal-directed behavior (4). Positive thinking skills training likely enhanced individuals' perceived ability to generate solutions to life challenges and strengthened their motivation to pursue meaningful goals, thereby increasing overall hope. This finding is consistent with previous research demonstrating that interventions focused on optimism and positive cognition can significantly improve life satisfaction and psychological well-being in elderly populations (20, 21). Additionally, the results align with broader evidence indicating that higher levels of hope are associated with better mental health outcomes and resilience in the face of adversity (5, 6). The substantial effect size observed for hope suggests that positive thinking interventions may be particularly effective in strengthening motivational and cognitive resources in later life, which is crucial given the multiple stressors associated with aging (1).

In relation to rumination, the findings revealed a significant reduction in repetitive negative thinking following the intervention. This result can be interpreted within the framework of cognitive-behavioral theory, which posits that modifying maladaptive thought patterns can lead to improvements in emotional regulation and psychological functioning (8). Positive thinking skills training likely facilitated cognitive restructuring processes, enabling participants to identify and challenge negative automatic thoughts and replace them with more adaptive cognitions. This mechanism is consistent with prior studies indicating that rumination is closely linked to internalizing symptoms and can be effectively reduced through cognitive interventions (9, 10). Furthermore, the reduction in rumination observed in this study aligns with findings from meta-analytic research highlighting the role of repetitive negative thinking in maintaining psychological distress and the benefits of interventions targeting these processes (11). Given that older adults may be particularly vulnerable to rumination due to increased exposure to life stressors and reduced cognitive flexibility, the observed decrease in rumination underscores the importance of incorporating cognitive skills training into interventions for this population (12, 17).

The significant reduction in guilt among participants in the experimental group represents another important finding of the study. Guilt, as a self-conscious emotion, is often associated with negative self-evaluation and psychological distress, particularly when it becomes excessive or maladaptive (14). The intervention likely contributed to reducing guilt by promoting self-acceptance, cognitive reframing, and the development of more balanced self-perceptions. These processes may have enabled participants to reinterpret past experiences and reduce the intensity of self-critical thoughts, thereby alleviating feelings of guilt. This interpretation is supported by previous research indicating that interventions targeting cognitive and emotional processes can effectively reduce maladaptive guilt and associated symptoms (15). Moreover, the findings are consistent with studies highlighting the role of existential concerns and unresolved life

experiences in contributing to guilt among older adults, suggesting that interventions addressing these issues can lead to significant improvements in emotional well-being (16).

The differential effect sizes observed across the three variables provide further insight into the mechanisms underlying the intervention's effectiveness. The strongest impact on hope for life suggests that positive thinking skills primarily function by enhancing motivational and future-oriented cognitive processes, which are central to psychological resilience. In contrast, the relatively smaller effect sizes for rumination and guilt may reflect the more entrenched nature of these maladaptive processes, which may require longer or more intensive interventions to achieve comparable levels of change. Nevertheless, the significant reductions observed in both rumination and guilt indicate that positive thinking skills training can effectively influence both cognitive and emotional domains, supporting its utility as a comprehensive intervention approach.

The findings of this study are also consistent with broader research on positive psychological interventions, which has demonstrated their effectiveness in improving mental health outcomes across diverse populations. For instance, interventions aimed at enhancing optimism and positive affect have been shown to reduce depression and anxiety while increasing life satisfaction and well-being (18, 19). Similarly, studies focusing on the therapeutic needs of the elderly have emphasized the importance of addressing psychological and emotional factors to promote successful aging (3). The present study extends this body of literature by providing empirical evidence for the effectiveness of positive thinking skills in simultaneously targeting multiple psychological variables, including hope, rumination, and guilt.

Furthermore, the results can be interpreted in light of the growing emphasis on integrative approaches to mental health, which recognize the interconnected nature of cognitive, emotional, and behavioral processes. By addressing these processes simultaneously, positive thinking skills training may produce synergistic effects, leading to more substantial and sustained improvements in psychological well-being. This perspective is supported by research highlighting the complex interplay between cognitive patterns, emotional states, and behavioral outcomes in shaping mental health (8). Additionally, the observed improvements in hope, rumination, and guilt may have important implications for broader aspects of well-being, including quality of life, social functioning, and physical health, which are critical considerations in the context of aging (2, 22).

Another important implication of the findings is the potential applicability of positive thinking skills training in institutional settings, such as nursing homes and rehabilitation centers. Older adults residing in such settings often experience reduced autonomy, social isolation, and limited access to psychological support, which can exacerbate emotional distress (3). The group-based nature of the intervention used in this study may have also contributed to its effectiveness by providing opportunities for social interaction, mutual support, and shared learning experiences. These factors may enhance the overall impact of the intervention and contribute to improvements in both psychological and social well-being.

In conclusion, the findings of this study provide strong support for the effectiveness of positive thinking skills training in enhancing hope for life and reducing rumination and guilt among elderly individuals. The results are consistent with existing theoretical frameworks and empirical evidence, highlighting the importance of addressing cognitive and emotional processes in interventions aimed at promoting mental health in older adults. By demonstrating the effectiveness of a relatively brief and structured intervention,

the study contributes to the growing body of literature on positive psychological interventions and underscores their potential for improving the well-being of aging populations.

One of the main limitations of the present study is the relatively small sample size, which may limit the generalizability of the findings to broader populations of elderly individuals. Additionally, the use of convenience sampling and the focus on a single rehabilitation center may introduce sampling bias and restrict the external validity of the results. Another limitation is the reliance on self-report measures, which may be subject to response biases such as social desirability and recall bias. Furthermore, the absence of a follow-up assessment limits the ability to evaluate the long-term effectiveness and sustainability of the intervention effects. Finally, potential confounding variables, such as participants' prior psychological conditions or social support levels, were not fully controlled, which may have influenced the outcomes.

Future research should aim to address these limitations by employing larger and more diverse samples to enhance the generalizability of the findings. Longitudinal studies with follow-up assessments are recommended to examine the durability of intervention effects over time. Additionally, future studies could explore the comparative effectiveness of positive thinking skills training with other psychological interventions, such as mindfulness-based or cognitive-behavioral therapies, to identify the most effective approaches for different populations. Investigating potential mediators and moderators of intervention outcomes, such as personality traits, social support, and cultural factors, would also provide valuable insights into the mechanisms underlying the effectiveness of positive interventions. Moreover, incorporating objective measures or multi-method assessment approaches could improve the validity and reliability of research findings in this area.

From a practical perspective, the findings of this study suggest that positive thinking skills training can be effectively implemented in clinical and community settings to enhance psychological well-being among older adults. Practitioners working with elderly populations are encouraged to incorporate positive cognitive and behavioral techniques into their interventions to address issues such as rumination and guilt while promoting hope and resilience. Developing structured group-based programs tailored to the specific needs of older adults may further enhance the effectiveness of such interventions. Additionally, integrating positive thinking training into existing healthcare and rehabilitation services could provide a cost-effective and accessible approach to improving mental health outcomes in aging populations.

### **Acknowledgments**

The authors express their deep gratitude to all participants who contributed to this study.

### **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.

## Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

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