



## The Implementation of Memory Game Activities as A Cognitive Function Stimulation Strategy for Older Adults at Harapan Ibu Nursing Home

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### Abstract

Cognitive decline is a common condition experienced by older adults and can affect quality of life, particularly among those living in nursing homes with limited activities and mental stimulation. This study aimed to describe the implementation of memory game activities as an effort to stimulate cognitive function in older adults at Harapan Ibu Nursing Home and to explore the subjective experiences of the elderly during their participation in the activity. The study employed a qualitative phenomenological approach involving 10 older adults selected through accidental sampling. Data were collected through observation, in-depth interviews, and documentation, and were analyzed using an interactive data analysis model consisting of data reduction, data display, and conclusion drawing and verification. The results showed that memory games were able to stimulate various aspects of cognitive function, including attention, short-term and long-term memory, perception, problem-solving skills, language ability, and self-awareness. In addition, the activity elicited positive emotional responses, activated personal memories, and strengthened social interaction among older adults. Overall, memory games are simple activities that are easy to implement and have potential as a non-pharmacological psychosocial approach to support cognitive health and well-being among older adults in nursing homes.

#### Keywords:

Cognitive Function, Memory Game, Older Adults, Cognitive Stimulation, Nursing Home

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## INTRODUCTION

As age increases, many older adults experience a decline in cognitive function, including aspects of memory, attention, orientation, and executive function, which affects their ability to perform daily activities and reduces quality of life. In nursing homes, this condition is often exacerbated by limited cognitive stimulation, restricted social activities, and monotonous daily routines, making the need for cognitive stimulation interventions increasingly important to explore. Findings from international and national studies indicate that game based interventions (such as memory games, board games, and serious games) have the potential to provide structured cognitive stimulation and enhance social engagement among older adults. Therefore, these interventions are worthy of being the focus of qualitative research that explores experiences, implementation processes, and contextual factors within the nursing home setting (Morán et al., 2024).

Existing quantitative studies have shown changes in cognitive function scores following memory game interventions therefore this study (Yahya et al., 2019) showed an improvement in cognitive scores among older adults after participation in group-based memory game activities, and other studies in local contexts have also reported positive outcomes related to the use of memory games in cognitive stimulation programs for older adults (Wilda, 2024; Pratiwi et al., 2024). Nevertheless, while quantitative findings are important for demonstrating effects, there is still limited research that explores in depth how memory game activities are implemented contextually in nursing homes how facilitators structure the sessions, how older adults respond subjectively, the challenges of implementation, and the contextual factors that influence the sustainability of such programs in elderly care facilities in Indonesia. Therefore, this study adopts a qualitative approach to understand the dynamics of implementing memory game activities at Harapan Ibu Nursing Home from the perspectives of both facilitators and participants.

According to (Solso et al., 2014), cognitive function encompasses a range of interrelated and cooperative mental activities, including how individuals receive stimuli from the environment through the senses and perception, process information with the assistance of attention and memory, and use this information in higher-level thinking processes such as language use, reasoning, and decision-making. (Solso et al., 2014) also describe several key aspects of cognitive function, namely: (1) Perception, which is the process of understanding and assigning meaning to stimuli received through the senses from the surrounding environment, involving interpretation based on an individual's experiences and knowledge; (2) Attention, which refers to an individual's ability to focus mental resources and awareness on a particular stimulus or activity while filtering out irrelevant information; (3) Short-term and long-term memory, which are information storage systems in the brain that operate over brief and extended periods, enabling individuals to learn, retain, and retrieve information as needed; (4) Problem solving, defined as the cognitive ability to identify and determine the most appropriate solutions to difficulties or challenges through logical reasoning, knowledge, and prior experience, reflecting the adaptive

and rational functioning of the human mind in everyday life; (5) Language, a symbolic system used by humans to convey meaning, communicate, and express thoughts, emotions, and ideas, through which individuals organize thinking, store information in verbal symbolic forms, and build social relationships; and (6) Consciousness, which refers to an individual's capacity to be aware of their own existence and to understand what is occurring around them, enabling awareness of thinking processes, emotional experiences, and actions at a given moment.

The research questions guiding this qualitative study are formulated as follows: How are memory game activities implemented as an effort to stimulate cognitive function at Harapan Ibu Nursing Home, and what factors influence the effectiveness and sustainability of these activities from the perspectives of facilitators and participating older adults? Accordingly, the purpose of this study is to describe and analyze the implementation of memory game activities as a cognitive stimulation effort for older adults at Harapan Ibu Nursing Home, with a focus on: (1) the implementation process of the activities (including planning, frequency, duration, and facilitation techniques); (2) older adults' subjective experiences of the activities (including motivation, enjoyment, and level of engagement); and (3) exploring and understanding how various aspects of cognitive function in older adults, namely perception, attention, short-term and long-term memory, problem-solving, language ability, and self-awareness are involved and stimulated through the activities. These objectives are formulated to address gaps in knowledge that have not been extensively explored by previous quantitative studies, thereby providing contextual understanding that can guide the adaptation of cognitive stimulation programs to better suit local conditions (Yahya et al., 2019).

Theoretically, this study is expected to contribute to the literature by elucidating the mechanisms through which game-based activities facilitate cognitive processes among older adults within a social-institutional context, as well as by enriching understanding of the contextual factors that moderate the effectiveness of non-pharmacological interventions. Practically, the findings are expected to provide operational recommendations for nursing home administrators and geriatric health and nursing practitioners regarding session design, frequency, and flexible yet impactful memory game facilitation strategies, including staff training and adaptation of games to participants' cognitive abilities. The qualitative findings may also serve as a foundation for future studies employing participatory action research designs or larger-scale quantitative effectiveness trials (Morán et al., 2024).

Relevant literature reviews indicate that memory game interventions can target working memory and short-term memory through activities involving recognition, matching, and repetition, while also enhancing attention and social engagement, which contribute to short- to medium-term cognitive effects. Recent studies in Indonesia have shown variations in implementation, with several studies reporting successful improvements in cognitive scores following structured interventions (Yahya et al., 2019), local nursing studies have reported positive outcomes from memory game programs adapted to the nursing home setting (Wilda,

2024), as well as innovations combining memory games with physical activities (exergames), which have demonstrated potential synergistic benefits for both cognitive function and physical fitness among older adults (Pratiwi et al., 2024). Nevertheless, a key limitation of the existing literature is the lack of in-depth descriptions of implementation processes and the perspectives of field actors, which constitutes a research gap that underpins the present qualitative study.

Based on the problem framework and research gap outlined above, the working hypothesis (initial assumptions to be explored through qualitative analysis) is that the implementation of memory game activities tailored to participants cognitive conditions, facilitated interactively by trained personnel, and supported by institutional backing will generate positive responses among older adults (including motivation and engagement) and lead to improvements in subjectively reported indicators of cognitive function. Conversely, limited resources, insufficient staff training, and rigid nursing home routines are expected to constitute the main barriers to effective implementation. The findings of this study are expected to serve as a foundation for contextually grounded and sustainable program recommendations at Harapan Ibu Nursing Home.

## **METHOD**

This study employed a qualitative method with a phenomenological approach using Descriptive Phenomenological Analysis (DPA) to gain an in-depth understanding of older adults subjective experiences in participating in memory game activities as an effort to stimulate cognitive function. The phenomenological approach was selected because it focuses on the meanings and essences of individuals lived experiences related to a particular phenomenon. According to Creswell (2007), phenomenological research aims to reveal the essential meanings of participants' experiences of the phenomena they encounter, while Moleong (2014) explains that phenomenology seeks to understand individuals experiences as they are personally perceived within real-life contexts.

The participants of this study consisted of 10 older adults residing at Harapan Ibu Nursing Home. The sampling technique used was accidental sampling, defined as a sampling method in which participants are selected based on those who are encountered incidentally by the researcher and meet the criteria for participation (Sugiyono, 2019). Using this technique, the researcher selected participants with the following characteristics: older adults who were not color-blind, not hearing impaired, able to walk or engage in activities, present during the implementation of the activities, willing to be interviewed, and capable of providing information relevant to the focus of the study.

**Table 1. List of Subjects**

No	Initials Name	Gender	Age
1	SU	Female	70
2	SH	Female	80
3	T	Female	85
4	R	Female	75
5	K	Female	90
6	SY	Female	79
7	S	Female	72
8	NN	Female	87
9	X	Female	83
10	N	Female	88

Data were collected through direct participatory non-intervention observation, in which the researcher was directly involved in the implementation of the activities as both facilitator and observer, without manipulating participants behavior. Through this observation, the researcher examined older adults' attention in following visual and verbal instructions, memory abilities in recalling colors and game sequences, problem-solving strategies used when facing difficulties, language use and communication patterns during the activities, emotional responses and self-awareness, as well as group dynamics that emerged through interactions among participants. Subsequently, in-depth interviews were conducted using a semi structured approach with open-ended questions, which were carried out after the completion of the entire series of game activities to allow older adults to reflect comprehensively on their experiences. Through these interviews, the researcher explored participants subjective experiences during the activities, their perceptions of the benefits and challenges of the games for cognitive function, the activation of long-term memory or personal recollections elicited by game stimuli, the cognitive strategies employed, and the social and emotional meanings of their involvement in the activities.

In addition, documentation was used as supporting data, including photographs of the activities, implementation notes, and administrative documents such as informed consent forms, participant lists, and the researcher's field notes. These materials were used to strengthen the findings from observations and interviews and to provide a contextual overview of the research process, thereby enhancing the validity and credibility of the data.

Data analysis in this study followed the analytical approach described by (Miles, M. B., Huberman, A. M., & Saldaña, 2014 ; Sugiyono, 2019) which conceptualizes data analysis as a cyclical and interrelated process rather than as separate linear stages. The analysis began as soon as the first data were collected in the field and continued through to the final drawing of conclusions. The first stage was data reduction, which involved selecting, focusing, and simplifying data obtained from observations, interviews, and documentation. At this stage, the researcher identified data relevant to the focus of the study such as older adults'

responses to the memory game activities, attention dynamics, variations in memory function, problem-solving strategies, language use, emotional responses, and the activation of personal memories and organized them into initial categories and emerging themes. The second stage was data display, in which the reduced data were organized into structured and comprehensible forms, such as thematic matrices, findings tables, and narrative descriptions. This stage enabled the researcher to identify patterns, relationships among categories, and emerging meanings derived from older adults experiences during participation in memory game activities. The third stage was conclusion drawing and verification, which involved interpreting the meaning of the data to formulate research findings related to the implementation of memory games as a means of stimulating cognitive function in older adults. The conclusions were not considered final from the outset; rather, they were continuously verified through repeated observations, triangulation across data collection techniques (observation, interviews, and documentation), and consistency of emerging patterns, until a credible and scientifically accountable understanding was achieved.

## RESULTS AND DISCUSSION

This community service activity was conducted on November 2, 2025, as a rehabilitative effort aimed at restoring cognitive functions in older adults that have declined due to aging, injury, accidents, or illness. Overall, the activity was implemented successfully and provided preliminary insights into the effectiveness of game-based interventions in stimulating various aspects of older adults' cognitive function, although several technical aspects still require further evaluation. The research findings are presented as follows:

**Table 2. Research Findings**

Main Theme	Sub-Themes
Meaning-Making of Games as a Meaningful Experience	Games as childrens playthings, enjoyable activities, a means of alleviating loneliness, social experiences, triggers of gratitude, and sources of emotional warmth.
Attention Dynamics in Following Visual Instructions	Relatively good initial focus, difficulty in sustaining attention, confusion due to multiple colors, rapid pace of instructions, attention diverted by the social environment, and a decline in focus after the game began.
Variations in Short-Term and Long-Term Memory Function	Ability to name colors immediately, errors in color sequence recall, decreased consistency of memory, activation of childhood memories, activation of meaningful life experiences, limitations in episodic memory, and association of colors with personal experiences.

Problem-Solving Strategies among Older Adults	Rehearsing information mentally, relying on personal memory, guessing when forgetting, imitating other participants, adopting a resigned attitude when unable to recall, continuing to attempt task completion, adaptive strategies, and non-adaptive strategies.
The Role of Language in Supporting Comprehension	Understanding verbal instructions, language barriers due to rapid pacing, ability to express feelings, language as a tool for social interaction, relevant verbal responses, and the role of language in supporting cognitive engagement.
Self-Awareness and Emotional Regulation	Awareness of one's own emotions, reflection on the gaming experience, adjustment of strategies according to personal abilities, emotional changes before and after the activity, acceptance of personal limitations, and positive emotional responses.
Activation of Personal Memories (Autobiographical Memory)	Colors as triggers of memories, childhood recollections, memories of places of residence, memories of past work or activities, family-related memories, and emotionally laden recollections.
Group Dynamics in Cognitive Processes	Imitation of other participants' behavior, motivation to participate driven by the social environment, social observation as a cognitive strategy, group interaction enhancing engagement, social support during activities, and cognitive processes operating collectively.

Games were interpreted not only as a means of stimulating cognitive function, but also as emotionally, sensorially, socially, and reflectively meaningful play experiences (Chen & Janicki, 2020). The games provided enjoyable experiences, evoked childhood nostalgia, and encouraged active engagement among older adults through interaction with game objects and the surrounding social environment. Theoretically, these findings align with the concept of meaningful play, which emphasizes that play becomes meaningful when individuals are able to understand, feel, and connect the gaming experience to their personal lives (Wong et al., 2024). In the context of older adults, play-based activities such as memory games function as enjoyable and non-threatening forms of cognitive stimulation, thereby supporting sustained engagement and acceptance of experienced cognitive limitations (Wong et al., 2024). Recent studies further indicate that simple cognitive games can help maintain memory function, attention, and cognitive flexibility in older adults, while simultaneously enhancing mood and psychological well-being.

In addition, older adults' engagement in group-based games contributed to reduced feelings of loneliness and improved quality of social interactions, both of which are important factors in the mental health of older adults residing in long-term care institutions (Shin et al., 2024). Games also provided sensory stimulation

through tactile engagement and object manipulation, which has been shown to help maintain the connection between cognitive functioning and embodied experience in later life (Chen & Janicki, 2020). Furthermore, the gaming experience fostered the emergence of positive emotions and life-meaning reflections, including feelings of gratitude and self-worth, which, according to positive psychology perspectives, contribute to subjective well-being and quality of life among older adults (Wang et al., 2025 & Octary et al., 2025). Accordingly, the memory game intervention in this study can be understood as a holistic psychosocial approach, in which games function not only as tools for cognitive training but also as meaningful experiential spaces that support emotional regulation, social connectedness, and life meaning among older adults.

An interview conducted with SU revealed the following statement,

“Yes, this is usually a game for children.” - (SU.02.11.2025)

Similarly, SH stated,

“Playing this is fun, it makes me giggle.” -(SH.02.11.2025)

N expressed the following response,

“I have never played with a ball before, but I am happy, dear. I feel a lot of joy because in the past I moved from one city to another.” -(N.02.11.2025)

NN also provided the following response,

“Yes, it was fun, but earlier the cards were shown too quickly. I got confused because there were so many colors.” -(NN.02.11.2025).

Based on the results of observations and interviews, older adults interpreted the memory game activities as enjoyable and meaningful experiences rather than merely as games or cognitive exercises. The games were able to evoke positive emotions, nostalgia for past experiences, and a sense of companionship through interactions with game objects and the surrounding social environment. Older adults’ responses—characterized by enjoyment, happiness, and cognitively engaged participation without feelings of pressure—indicate that memory games function as psychosocial media that support emotional and social well-being. These findings underscore that games can serve as spaces of meaningful experience, helping older adults feel valued, engaged, and comfortable in participating in daily activities within the nursing home setting.

The dynamics of older adults’ attention in following visual instructions during memory game activities indicate that attention functions as an initial cognitive foundation that enables task comprehension, yet remains vulnerable to decline as information-processing demands increase. The findings of this study are consistent with research by (Xu et al., 2024) which demonstrates that clear and well-directed visual instructions can activate top-down attention, allowing individuals to focus on task-relevant stimuli during the initial stages of task execution. In addition, the characteristics of visual stimuli—particularly color and the level of display complexity—play an important role in sustaining attention, with visually rich and

varied color displays shown to enhance attentional engagement (Andersen & Maier, 2019). In the context of aging, limitations in information processing capacity, reduced ability to sustain attention, and slower cognitive processing speed are well-documented characteristics that influence older adults performance in attention and memory based tasks (Hasher & Zacks, 1988) ; (Park et al., 2002) ; (Salthouse, 1996).

Subject SU stated,

“Yes, because earlier I was told by the female and male facilitators.”  
(SU.02.11.2025)

A similar view was expressed by subject SH, who stated,

“Because from the beginning I already looked carefully at the colors.”  
(SH.02.11.2025)

In addition, subject T explained,

“The colors were still clear to my eyes; I looked at them directly and remembered them.” (T.02.11.2025)

In contrast to the previous statements, subject S reported experiencing difficulty in remembering,

“Yes, I was able to look carefully at the cards earlier, but when it started, I suddenly forgot.” (S.02.11.2025)

Furthermore, subject R stated,

“I could still remember the colors from earlier everything was correct, right?”  
(R.02.11.2025)

Meanwhile, subject X expressed that attention to both color and sequence posed a particular challenge,

“Both the colors and the sequence are difficult; paying attention to the colors and the order is hard.” (X.02.11.2025)

Similar difficulties were also expressed by subject SY,

“It’s hard to arrange the colors.” (SY.02.11.2025)

On the other hand, subject K mentioned that certain elements could still be recalled clearly,

“Yes, I remember the colors of the balls at the ends.” (K.02.11.2025)

Subject N confidently stated,

“It’s easy, dear. I memorized the colors earlier.” (N.02.11.2025)

Finally, subject NN explained,

“Yes, I could do it, it was easy. My memory is still sharp, but you went too fast, so I forgot.” (NN.02.11.2025)

Based on the findings above, older adults attention during memory game activities appeared to be dynamic, with relatively good initial focus emerging when visual instructions were delivered clearly and in a well directed manner. This condition is consistent with the findings of (Xu et al., 2024) who explain that visual instructions can activate top-down attention mechanisms, enabling individuals to focus on task relevant stimuli during the initial stage of task execution. However,

older adults ability to sustain attention tended to decline as task demands increased and visual information needed to be processed continuously. This observation aligns with (Hasher & Zacks, 1988) who noted that aging is characterized by declines in inhibitory control and the maintenance of attention within working memory.

Furthermore, older adults difficulties in dealing with multiple colors and sequences indicate an increased cognitive load resulting from visual complexity. This finding is in line with (Andersen & Maier, 2019) who argue that visual displays with high color variability require greater attentional resources, thereby potentially reducing focus, particularly among older individuals. (Park et al., 2002) also emphasize that limitations in information processing capacity in older adults lead them to selectively attend to only the most salient stimuli, while other stimuli are more likely to be neglected.

Moreover, findings related to the pace of instruction delivery suggest that older adults require more time to process visual information before it can be effectively encoded. This condition corresponds with the processing speed theory proposed by (Salthouse, 1996) which posits that age-related slowing of cognitive processing can hinder information encoding when instructions are delivered too rapidly. Taken together, these results underscore that the effectiveness of memory game activities as a means of cognitive stimulation for older adults is strongly influenced by the clarity and tempo of instructions, as well as the level of visual stimulus complexity tailored to the attentional characteristics and cognitive capacities of older adults.

Short-term and long-term memory functions refer to an individuals ability to store incoming information. When information is retained for a brief period approximately 15–30 seconds and is not rehearsed or further processed, it will fade, this process is known as short-term memory (STM). STM functions as an active workspace that allows the mind to temporarily hold and manipulate information before it is transferred into more permanent storage. In contrast, long-term memory (LTM) represents a more durable and relatively unlimited storage system, enabling individuals to learn new information, recall past experiences, and retrieve knowledge when needed (Musdalifah, 2019). Among older adults, changes in both short-term and long-term memory functions are a natural consequence of the aging process, which affects the nervous system, particularly the hippocampus and prefrontal cortex. These changes are associated with slower information-processing speed, reduced recall accuracy, and diminished ability to retrieve past experiences (Fjell & Walhovd, 2010).

Nevertheless, certain forms of episodic memory especially those with strong emotional content or those that are frequently activated through repetition may remain relatively well preserved and more easily accessible. Observations and interviews conducted during the colorful ball game activity revealed that most older adults still demonstrated relatively intact short-term memory, as reflected in their ability to accurately name the colors immediately after the stimulus was presented. In contrast, long-term memory function showed considerable interindividual variation; some participants were able to recall childhood experiences with clarity,

while others experienced difficulty accessing such memories. This variability is consistent with previous findings indicating that aging does not affect all memory systems uniformly, with episodic memory tending to decline earlier, whereas semantic memory and personal preferences remain comparatively more resilient (Lalla et al., 2022).

Furthermore, observations and interviews during the colorful ball game identified variations in both short-term memory (STM) and long-term memory (LTM) functions among older adults. Most participants were able to correctly recall colors immediately after stimulus presentation, indicating relatively preserved STM. However, some participants demonstrated errors in color sequence and decreased consistency of recall after repeated trials, particularly when the number of stimuli increased or when instructions were delivered at a rapid pace. These findings reflect limitations in short-term episodic memory capacity among older adults and suggest that higher cognitive load may weaken recall accuracy and consistency. This pattern aligns with the findings of (Pliatsikas et al., 2019) who reported that working memory capacity in older adults tends to decline and is accompanied by reduced recall performance as memory tasks become more complex, particularly under high load conditions involving multiple items. Moreover, increased cognitive load has been associated with impairments in cognitive functioning in older adults, indicating that greater memory processing demands are likely to increase the probability of errors and inconsistencies in recall.

Participant T mentioned that the sequence of colors could still be recalled clearly, stating,

“Yes, green, pink, purple, yellow, orange am I correct?” (T.02.11.2025)

A similar response was expressed by participant SY, who stated,

“Yes. The colors were pink, orange, purple, yellow, pink.” (SY.02.11.2025)

However, participant S reported a different experience, stating,

“Yes, I was able to look at the paper carefully, but once it started, I suddenly forgot. Even though in previous days, when there were games like this, I always won.” (S.02.11.2025)

Meanwhile, participant K stated that they were still able to recall the colors quite well, saying,

“Yes, miss. Pink, green, yellow, purple, orange.” (K.02.11.2025)

Regarding long-term memory (LTM), this study found considerable interindividual variation. Some older adults were able to access childhood memories and meaningful life experiences that were activated through color stimuli. In this context, colors functioned as associative triggers that linked present experiences with past autobiographical memories. However, other participants demonstrated limitations in episodic memory retrieval. This finding indicates that not all past experiences can be easily accessed, particularly those that lack strong emotional content or are infrequently reactivated. Such variability is consistent with the

findings of (Pratiwi et al., 2024) which suggest that visual stimuli such as color can activate autobiographical memory in older adults, especially when the stimuli are closely related to personal life experiences or individual preferences.

Participant R revealed that,

“I liked everything. When I was a child, I never played with balls like this, maybe never at all. I didn’t really play, I mostly helped my mother sell things at the market. I only ever saw balls being sold at the market.” (R.02.11.2025)

Meanwhile, participant T expressed interest by stating,

“I like all the colors, but I like orange the most because it looks like an orange fruit. When I was little, I once played something like a ball pool game the balls were similar.” (T.02.11.2025)

Furthermore, participant K stated,

“I’ve played with balls like this before, miss, last Sunday with some young women. They were very kind, but they don’t come here anymore.” (K.02.11.2025)

Moreover, differences in older adults’ ability to access long-term memory further support the findings of (Nyberg et al., 2012) which indicate that the aging process does not affect all memory systems uniformly. Episodic memory tends to decline earlier, whereas semantic memory and personal preferences are relatively more preserved. This pattern was evident in the present study, as some older adults were still able to associate colors with aspects of their identity or daily habits, despite experiencing difficulty in recalling specific experiential details. Thus, the findings of this study indicate that memory function in older adults is dynamic and heterogeneous. The colorful ball game not only stimulated short-term memory but also facilitated the activation of long-term memory that was personally meaningful. The variation in responses underscores that recall performance in older adults is strongly influenced by stimulus complexity and the personal meaning associated with the stimulus.

Problem-solving strategies among older adults indicate that they retain the capacity to respond actively to cognitive demands, despite limitations in memory and attentional functions. In the context of memory game activities, older adults employed various strategies to cope with difficulties in recalling and sequencing colors, including information repetition, taking brief pauses, and utilizing the social environment as a source of support. These findings are consistent with (Safitri et al., 2024) who reported that group activity therapy based on visual games encourages older adults to apply simple cognitive strategies through observation, stimulus repetition, and linking new information to prior experiences. Such strategies play a crucial role in maintaining cognitive engagement among older adults, even in the presence of age related cognitive decline. Similarly, (Fadhillah et al., 2024) found that mini games facilitate older adults continued involvement in problem-solving processes through trial and error strategies, behavioral adjustments, and observation

of other participants, highlighting that problem-solving in later life is flexible and context-dependent. Furthermore, older adults ability to implement problem-solving strategies is strongly influenced by basic cognitive functions such as orientation, attention, memory, and language which serve as foundational processes for understanding instructions and selecting appropriate responses (Anggeriyane et al., 2024).

As expressed by participant SH,

“I looked at them one by one. I was already confident.” (SH.02.11.2025)

Similarly, participant R stated,

“If I forget, then I just guess.” (R.02.11.2025)

Participant SU also mentioned,

“I try to remember what was told earlier, and if I can’t remember anymore, I just accept it.” (SU.02.11.2025)

Participant S explained,

“So I looked at the elder next to me.” (S.02.11.2025)

Likewise, participant SY stated,

“I stay quiet first, take a break....” (SY.02.11.2025)

Based on these findings, it can be understood that older adults actively employ various problem-solving strategies when facing cognitive challenges, encompassing both adaptive and non-adaptive approaches. Adaptive strategies such as repeating information, taking brief pauses, and continuing to attempt task completion reflect cognitive regulation and efforts to maintain executive functioning. In contrast, non-adaptive strategies, including guessing, resignation, or imitating other participants, indicate limitations in cognitive compensation mechanisms. Nevertheless, these strategies still function as means for older adults to sustain engagement in the activity. This finding underscores that problem-solving strategies in older adulthood are not merely indicators of cognitive capacity, but rather the result of interactions between individual abilities, task demands, and the surrounding social environment. Thus, the memory game serves as a medium for cognitive stimulation that enables older adults to remain mentally active despite experiencing age-related cognitive limitations (Safitri et al., 2024) ; (Fadhilah et al., 2024) ; (Anggeriyane et al., 2024).

Language plays a crucial role in helping participants grasp the overall game instructions, build cognitive engagement, and facilitate social interaction throughout the activity. Through verbal instructions, participants are able to understand the rules of the game, adjust their responses, and demonstrate active involvement in the ongoing process. However, the effectiveness of language is strongly influenced by the manner and pace of its delivery. Instructions delivered too quickly may become a barrier for participants to process information optimally, thereby affecting comprehension and performance during the game.

These findings indicate that language functions not only as a medium for conveying information but also as a supportive mechanism for older adults’ cognitive

processes. The ability to understand and respond to verbal language is closely related to attention, information processing, and mental engagement in activities. This is consistent with the study by (Rahmawati & Susanti, 2024) which reported a significant relationship between cognitive abilities and storytelling skills in older adults. Linguistic competence and verbal expression reflect cognitive functioning and play an important role in sustaining mental engagement during social and cognitive activities.

Language also serves as a tool for social interaction that contributes to participants' emotional comfort. Dialogic and supportive communication helps create a safer and more enjoyable atmosphere, thereby encouraging active participation. This finding is reinforced by (Kumalasari et al., 2024) who emphasized that therapeutic communication in older adults plays a vital role in enhancing comfort, understanding, and engagement in activities. Through appropriate communication, older adults not only find it easier to understand instructions but also feel emotionally valued and included.

Participant SU stated,

“I understand, but earlier the colors of the balls were shown very quickly.”  
(SU.02.11.2025)

A similar response was expressed by another participant,

“I understand the rules of the game; the game itself is very easy.”  
(R.02.11.2025)

Thus, the role of language in this study cannot be separated from efforts to support cognitive functioning and psychological well-being in older adults. Language delivered clearly, at an appropriate pace, and accompanied by supportive interaction contributes to improved comprehension, enhanced cognitive engagement, and positive emotional experiences during the activity.

According to (Schraw & Dennison, 1994) awareness is defined as an individual's ability to reflect in order to understand and regulate learning processes and knowledge, enabling them to identify relevant information or resources needed to complete a task. Awareness also involves an individual's understanding of their personal perspective on the task being performed, as well as insight into when and why particular strategies are used in problem solving. In older adults, awareness represents an important aspect, as it is closely related to cognitive, emotional, and social changes that occur as part of the aging process. Older adults commonly experience a decline in their ability to reflect on, understand, and regulate strategies when carrying out tasks.

Based on observations and interviews, the findings indicate that several participants demonstrated relatively good levels of self-awareness and emotional regulation while engaging in the memory game activity. These participants were able to describe their emotional experiences, recognize changes in mood before and after the activity, and explain the reasons underlying the actions or strategies they selected

during gameplay. Such awareness of emotional states reflects an adaptive reflective capacity and supports positive emotional regulation when facing cognitively demanding activities. On the other hand, some participants showed less stable awareness during the game. These individuals tended to experience confusion, forget information quickly, or rely on guessing strategies without clear planning when performing the task.

Nevertheless, all participants exhibited predominantly positive emotional responses and an ability to adjust to the activity provided. This was reflected in their acceptance of personal limitations, enjoyment of the gameplay process, and continued emotional engagement despite experiencing cognitive challenges. Overall, these findings suggest that most older adults retained adaptive cognitive awareness, enabling them to recognize their own experiences and regulate actions and emotions in accordance with their individual capacities. This finding is consistent with the study by (Prahasasgita & Lestari, 2023) which reported that cognitive stimuli such as memory games can help enhance awareness functions in older adults. Such activities function not only as memory stimulation but also implicitly train older adults to reflect on their experiences, become aware of their emotional states, and adjust the strategies they use throughout the activity.

Participant T stated,

“I was happy. As I said earlier, I felt happy because there was another activity, so it felt lively. I wasn’t sad at all.” (T.02.11.2025)

Participant X shared,

“I’m happy. Meeting you all helps ease my longing for my grandchildren. I have a grandchild who looks like you.” (X.02.11.2025)

Participant N explained,

“I felt ordinary at first because I wasn’t feeling well, I had a fever. But now I’m happy because when students come here, I have other activities besides lying down and chatting with other older adults.” (N.02.11.2025)

Similarly, participant R reiterated,

“I felt happy. I wasn’t sad during the game. Sometimes I feel sad later when you leave because it gets quiet. I’m still new here, so I’m not fully settled yet, but what matters is being healthy and happy.” (R.02.11.2025)

Based on observations and interviews, the findings indicate that older adults demonstrated relatively good self-awareness and emotional regulation while participating in the memory game activity. This was reflected in their ability to recognize and express their feelings, enjoy the activity, and adjust emotional responses despite experiencing physical or cognitive limitations.

Based on interviews and observations conducted during the memory game activity, it was found that five older adults participants SU, T, R, X, and SY were able to activate personal memories. The activation of these personal memories was indicated by the re-emergence of meaningful recollections from their life

experiences. In this study, the stimulus used was a visual stimulus in the form of colorful balls, which functioned as a sensory trigger in the process of memory retrieval.

Participant T expressed,

“I like all the colors, but my favorite is orange because it looks like an orange fruit. When I was a child, I once played a ball bath game like that the balls were similar.” (T.02.11.2025)

Participant SU also stated,

“I never played with balls, but I feel happy. I have many happy memories because I used to move from one city to another.” (SU.02.11.2025)

Participant R added,

“I like everything. When I was young, I never played with balls like this. I rarely played; I mostly helped my mother sell things at the market. I only ever saw balls being sold there.” (R.02.11.2025)

Participant X shared,

“I feel happy, especially meeting you all it helps ease my longing for my grandchildren. I have a grandchild who looks like you.” (X.02.11.2025)

In addition, participant SY stated,

“I never played like this. What I used to do was explore villages walking around, knowing which neighborhood it was. Purple is my favorite color; all my clothes and headscarves are purple.” (SY.02.11.2025)

Based on the participants' responses, the activation of personal memories encompassed recollections of childhood, past places of residence, preferred activities or hobbies, as well as memories related to family members, all of which represent integral parts of the older adults' life trajectories. This finding is consistent with (Mace & Unlu, 2020) who argue that the activation of personal memories may involve recollections of life experiences, meaningful activities, and personal relationships that collectively form an individual's life narrative.

These memories emerged as a result of the stimulus provided during the activity, namely the use of colorful balls. The findings indicate that play-based therapy, such as the colorful ball memory game, creates a safe and comfortable space for older adults to re-express life experiences stored in long-term memory. Thus, the activity functions not only as a means of cognitive stimulation but also as a medium for self-reflection and emotional processing among older adults. This finding aligns with the study by (Kirk & Berntsen, 2018) which demonstrated that the use of concrete objects as stimuli can facilitate the activation of long term autobiographical memory in older adults. In the present study, the concrete object took the form of colorful balls, which served as effective sensory stimuli in eliciting personal life experiences. This supports the role of physical and sensory based stimuli in triggering autobiographical memories and reinforcing the emotional and personal significance of memory activation in later life.

As expressed by participant S,

“So I just looked at the older person next to me.” (S.02.11.2025)

Similarly, participant SY stated,

“If I hadn’t seen the others walking to the hall, I probably wouldn’t have joined.” (SY.02.11.2025)

Based on the findings above, the imitative behavior exhibited by older adults reflects the use of observation-based cognitive strategies to compensate for limitations in understanding instructions. According to (Bandura, 2024) observational learning enables individuals to adjust their behavior to environmental demands by imitating models perceived as relevant. In addition, (Heyes, 2018) emphasizes that imitation functions as a cognitive learning mechanism that reduces information-processing demands, as individuals do not need to construct new responses from scratch but can instead replicate observed behaviors.

Accordingly, within the context of the memory game activity, group dynamics serve as a source of behavioral models that guide older adults in following instructions and game procedures. This imitative process helps older adults remain engaged in cognitive activities despite limitations in attention or memory, demonstrating that the presence of other participants is not merely social in nature but plays a direct role in supporting cognitive processes through imitation mechanisms.

## CONCLUSION

Based on the overall findings of this study, it can be concluded that the implementation of a memory game using colorful ball activities for older adults functions as a holistic psychosocial approach that not only stimulates cognitive function but also supports emotional well-being, social interaction, and meaning-making in later life. Older adults perceived the game as an enjoyable and meaningful experience emotionally, sensorially, and socially, rather than merely as a cognitive exercise. This perception fostered feelings of joy, nostalgia for past experiences, and a sense of companionship through interaction with game objects and the group environment. Older adults’ attention in following visual instructions was found to be dynamic, with relatively good initial focus when instructions were delivered clearly and in a structured manner. However, attention tended to decline as stimulus complexity and information-processing demands increased, highlighting the importance of adjusting the pace and level of difficulty of the game to match older adults’ cognitive capacities. Variations in short-term and long-term memory functions were also observed. While most participants were able to maintain short-term memory relatively well, the ability to access long-term memory was strongly influenced by the personal meaning and emotional salience of the stimuli presented.

When facing cognitive challenges, older adults employed a range of problem-solving strategies, both adaptive and non-adaptive, reflecting efforts to sustain cognitive engagement despite functional limitations. Language played a crucial role

in supporting comprehension, cognitive involvement, and emotional comfort, particularly when instructions were delivered clearly, repetitively, and at an appropriate pace. In addition, the majority of participants demonstrated relatively adaptive self-awareness and emotional regulation, as evidenced by their ability to recognize emotions, accept personal limitations, and enjoy the gaming process. The colorful ball game also functioned as a concrete visual stimulus capable of activating personal or autobiographical memories, including childhood experiences, meaningful activities, past living environments, and family relationships, thereby serving as a medium for self-reflection and emotional processing. Group dynamics further supported cognitive processes through mechanisms of observational learning, whereby older adults imitated the behaviors of other participants to understand instructions and follow the flow of the game. Overall, these findings affirm that memory games serve not only as tools for cognitive stimulation but also as meaningful experiential spaces that help older adults feel valued, engaged, and comfortable in their daily lives within nursing home settings.

## RECOMMENDATIONS

The implementation of memory game activities for older adults at Harapan Ibu Nursing Home demonstrated that the activities were carried out effectively and were able to stimulate cognitive aspects such as memory, attention, language, and awareness. However, several technical challenges were identified, including instructions delivered at an overly rapid pace, an excessive number of colors, and the tendency of some older adults to imitate other participants due to close seating arrangements, which limited the optimality of the stimulation process. This study also has several limitations, including a small number of participants, the implementation of the activity on a single occasion, and the absence of objective measurement tools to assess cognitive changes quantitatively. Therefore, future research is recommended to employ mixed-methods designs to achieve more comprehensive findings, refine game design through simplification of colors and slower delivery of instructions, and increase the number of sessions on a sustained basis to monitor changes in older adults' cognitive function over time.

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