

CHAPTER I

INTRODUCTION

This chapter presents the research background, identifies the research problems, outlines the research objectives, research significances, and definition of key terms.

1.1 Research Background

Language is one of the most fundamental human abilities, allowing us to express thoughts, share emotions, and connect with others. It is a complex cognitive system that involves forming ideas, retrieving words, processing grammar, organizing sounds, and using language appropriately in social contexts. Psycholinguistics, the study of how the mind processes and uses language, shows that these abilities are closely linked to memory and brain function (Dardjowidjodjo, 2010). When we speak, multiple cognitive processes work together like attention, working memory, semantic knowledge, syntactic processing, and motor planning all supported by an intricate network of brain regions. When any part of this system is disrupted, language difficulties emerge, affecting a person's ability to express themselves, understand others, or engage in meaningful conversation. Understanding how language works in the brain is not only important for theoretical purposes but also has practical implications for helping people who experience language difficulties due to various conditions.

Language disorders refer to persistent difficulties in understanding or producing language due to disruptions in phonological, semantic, syntactic, pragmatic or broader communicative processes (Muzaiyanah, 2015). These disorders can manifest in various forms, ranging from difficulties in articulating

speech sounds to problems in accessing word meanings, constructing grammatically correct sentences, or using language appropriately in social contexts.

Unlike the temporary word-finding difficulties that healthy individuals occasionally experience, language disorders in clinical populations are persistent, systematic, and significantly impact daily communication and quality of life. Language disorders can result from developmental factors, traumatic brain injury, stroke, or neurodegenerative diseases such as dementia. Each of these causes affects the language system differently, requiring different approaches to assessment and intervention. Among these conditions, dementia presents unique challenges because the language disorders are progressive, meaning they worsen gradually over time, and are intertwined with broader cognitive decline affecting memory, attention, and executive functions.

In individuals with dementia, communication problems arise as brain networks supporting language and memory gradually decline, including Broca's area (responsible for speech production and grammatical processing), Wernicke's area (involved in language comprehension), the hippocampus (critical for memory consolidation), and the prefrontal cortex (essential for executive functions and cognitive control) (Bayles & Tomoeda, 2007). This widespread neural deterioration leads to a constellation of language disorders that progressively worsen over time. The initial stages of dementia often present with subtle word-finding difficulties and mild comprehension problems, which gradually evolve into more severe deficits including reduced speech fluency, impaired sentence construction, loss of semantic knowledge, and inability to maintain coherent conversation. The progressive nature of these disorders distinguishes dementia-related language disorders from acute aphasia

caused by stroke, where language deficits typically stabilize after the initial injury. In dementia, families and caregivers witness a slow but steady decline in their loved one's ability to communicate, which can be emotionally devastating for everyone involved.

These language problems are not caused solely by memory loss but also by the weakening of higher-level cognitive functions such as attention, planning, and executive control, making a psycholinguistic perspective essential for understanding the relationship between cognitive decline and language disorder (Kempler & Goral, 2008). Executive functions, which include the ability to focus attention, inhibit irrelevant information, plan and organize thoughts, and monitor one's own performance, play a crucial role in successful language use. For example, maintaining a coherent conversation requires holding the topic in working memory, inhibiting tangential associations, planning upcoming utterances, and monitoring whether one's responses are appropriate and relevant. In dementia, as executive functions deteriorate, patients struggle not only with retrieving individual words but also with organizing thoughts into coherent narratives, staying on topic during conversation, and recognizing when their communication has broken down. This interaction between cognitive decline and language disorder highlights why a purely linguistic analysis is insufficient. Understanding language disorders in dementia requires examining the broader cognitive architecture that supports language processing.

From a psycholinguistic perspective, the language disorders observed in dementia reflect breakdowns at multiple levels of language processing, as described in influential models such as Levelt's (1989) Speech Production Model. According to this model, speech production involves three main stages: conceptualization (forming the message or communicative intent), formulation

(selecting appropriate words and constructing grammatical structures), and articulation (executing the motor plans for speech). In dementia, disruptions occur across all three stages. At the conceptualization stage, patients may struggle to form clear communicative goals due to impaired executive function and working memory. At the formulation stage, weakened semantic networks and impaired lexical access result in word-finding difficulties and simplified grammatical structures. At the articulation stage, motor coordination problems may lead to dysarthric speech or prosodic abnormalities. Moreover, research based on Ullman's (2001) Declarative/Procedural Model demonstrates that dementia differentially affects declarative memory (which stores word meanings, facts, and autobiographical information) and procedural memory (which governs grammatical rules and automatic linguistic routines). In the early and middle stages of dementia, declarative memory deteriorates more rapidly than procedural memory, resulting in a characteristic pattern where patients struggle to retrieve specific words but maintain relatively intact grammatical abilities. This dissociation provides insight into why some language functions remain preserved longer than others and why interventions targeting different memory systems may yield different therapeutic outcomes.

The number of people affected by dementia continues to increase globally, with the World Health Organization (2024) reporting more than 55 million cases worldwide, a figure projected to reach 78 million by 2030 and 139 million by 2050. This dramatic rise reflects both the aging of the global population and improvements in diagnostic capabilities. In Indonesia, the prevalence of dementia is expected to double within the next two decades due to increased life expectancy and improved diagnostic awareness (Ministry of Health, 2023). As one of the countries with a rapidly aging population in

Southeast Asia, Indonesia faces unique challenges in providing adequate care and support for individuals living with dementia, particularly in a cultural context where multigenerational caregiving remains the norm and formal dementia care services are still developing. Beyond memory disorder, communication breakdown in dementia significantly affects individuals' ability to interact and express themselves, placing emotional and social strain on both patients and caregivers (Banovic et al., 2018; Hoel et al., 2021). When a person with dementia struggles to find words, loses track of conversations, or can no longer recognize familiar faces, the impact extends far beyond the immediate frustration of failed communication. These difficulties erode the person's sense of self, as language is deeply intertwined with identity, personal history, and social connection.

Effective communication plays a crucial role in maintaining personal identity, reducing anxiety, and managing behavioral challenges, which has made the preservation of language abilities a growing priority in neuroscience research and geriatric care. Research shows that individuals with dementia who retain some ability to communicate verbally report higher quality of life and experience fewer behavioral disturbances such as agitation, aggression, or withdrawal (Müller & Guendouzi, 2005). Communication serves not only as a means of expressing basic needs but also as a vital channel for emotional expression, social engagement, and maintenance of dignity.

When communication breaks down, patients may become frustrated, isolated, or distressed, leading to what are often labeled as "*challenging behaviors*" but are more accurately understood as attempts to communicate unmet needs or emotional distress. For this reason, interventions that can preserve, restore, or support

communication abilities even temporarily hold tremendous value for both patients and those who care for them.

Current pharmacological treatments for dementia, such as cholinesterase inhibitors (donepezil, rivastigmine, galantamine) and memantine, provide only modest improvements in cognitive and global functioning, with limited evidence of significant effects on language and communication abilities (Raina et al., 2008). These medications work primarily by modulating neurotransmitter systems: cholinesterase inhibitors increase acetylcholine availability, while memantine regulates glutamate activity in an attempt to compensate for neurochemical imbalances caused by neurodegeneration. While they may slow cognitive decline or temporarily stabilize symptoms in some patients, their benefits are generally modest, time-limited, and highly variable across individuals. More importantly, clinical trials have shown that these medications have minimal impact on the specific language disorders that profoundly affect daily communication, such as word-finding difficulties, conversational coherence, and pragmatic language use. The limitations of pharmacological approaches have led researchers and clinicians to explore alternative interventions that might address language and communication difficulties more directly and effectively.

Due to these limitations, increasing attention has been directed toward non-pharmacological interventions, particularly music therapy, as complementary approaches. Music therapy is considered a gentle and promising intervention that utilizes sound, rhythm, melody, and lyrics to engage relatively preserved brain regions and strengthen existing cognitive functions (Jiménez-Palomares et al., 2024). Unlike medications that attempt to alter brain chemistry, music therapy works by harnessing the brain's natural responses to musical stimuli—responses that often remain remarkably intact even in advanced

dementia.

The therapeutic power of music lies in its ability to simultaneously engage multiple neural systems: auditory processing networks, motor-timing circuits, emotional and memory centers in the limbic system, and language areas in both hemispheres of the brain. What makes music therapy particularly compelling is its accessibility and cultural universality. Music requires no special training to appreciate, transcends language barriers, and connects directly with emotional and autobiographical memory systems that are often made to be preserved longer than other cognitive functions. Families and caregivers frequently report transformative moments when a non-verbal or withdrawn patient suddenly begins singing along to a familiar song, makes eye contact, or engages in conversation after listening to personally meaningful music.

Henry and Mary Lou, the subjects of this study, are elderly individuals featured in *Alive Inside*, which explores the impact of personalized music on individuals with dementia. Henry is diagnosed with severe dementia, likely linked to advanced Alzheimer's disease, and exhibits profound disorders in memory, identity recognition, and language production. Before music exposure, he shows minimal verbal output, inability to recognize familiar people, and limited social interaction, reflecting severe cognitive and linguistic decline. However, his strong personal connection to music, particularly jazz, becomes a key factor in the temporary reactivation of his memory and language abilities.

Mary Lou is also diagnosed with Alzheimer's disease and demonstrates significant lexical and communicative disorders in her pre-music condition. Her speech is characterized by anomia, limited vocabulary, frequent pauses, and difficulty maintaining coherent

expression. These disorder indicate disruption in lexical access and overall language production. Similar to Henry, her familiarity with music contributes to noticeable improvements after exposure, including better word retrieval, increased fluency, and more coherent and expressive speech. Together, both participants provide important evidence of how music can support temporary language reactivation in individuals with dementia.

Previous studies have shown that music plays an important role in activating brain regions related to emotion, memory, and self-related processing. Neuroimaging research demonstrates that listening to personally meaningful music stimulates key areas such as the hippocampus, amygdala, and prefrontal cortex. Koelsch (2014), in his review *Brain Correlates of Music-Evoked Emotions* published in *Nature Reviews Neuroscience*, explains that emotionally significant music consistently engages limbic and paralimbic structures, which are crucial for emotional regulation and autobiographical memory. These findings provide a neurological basis for understanding why familiar music can evoke strong emotional responses and memory recall, particularly in individuals with cognitive decline.

This pattern of neural activation helps explain why familiar music can evoke autobiographical memories and stimulate linguistic output even in individuals with advanced dementia. Empirical studies consistently show that music therapy functions as an effective non-pharmacological intervention by engaging neural networks associated with memory, attention, and language processing. For instance in research from Bleibel et al., (2023) entitled "*The effect of music therapy on cognitive functions in patients with Alzheimer's disease: a systematic review of randomized controlled trials*" published in *Frontiers in Psychology* and Shirsat et al., (2023) in *Journal of Alzheimer's Disease*, further confirm that music-based interventions

enhance spontaneous speech, social interaction, and communicative engagement by activating preserved cognitive and emotional pathways. Together, these findings support the view that music facilitates language reactivation not merely through emotional arousal, but through systematic engagement of memory-language networks in the brain. However, despite these positive findings, most studies rely on general clinical assessments or caregiver reports rather than detailed linguistic analysis, highlighting the need for a psycholinguistic framework to explain how music influences specific mechanisms of language production and comprehension.

Research on music-evoked autobiographical memories (MEAMs) shows that familiar music can function as a powerful cue for memory retrieval in people with dementia. A study by Baird et al., (2020) published in the journal *Neuropsychologia* under the title “*Music-evoked autobiographical memories in behavioural variant frontotemporal dementia,*” found that individuals with behavioural variant frontotemporal dementia were still able to recall autobiographical memories when listening to familiar music. Although the memories retrieved were less specific and detailed compared to those of healthy control participants, the findings demonstrate that music can bypass some cognitive limitations caused by neurodegeneration and access relatively preserved emotional and memory-related neural pathways. This evidence highlights the unique role of music as an effective trigger for autobiographical memory, even in neurodegenerative conditions.

Next, another relevant previous study is a scoping review conducted by Ong et al. (2024) entitled “*The Use of Music and Music-Related Elements in Speech-Language Therapy Interventions for Adults with Neurogenic Communication Disorders*”. This study reviewed research on the use of music and musical elements such as

rhythm, melody, and singing in speech-language therapy for adults with neurological communication disorders, including dementia. The findings show that music-based interventions can improve speech production, verbal initiation, fluency, and communicative engagement. Music was found to help activate preserved cognitive and motor pathways, allowing patients to express language more effectively than through verbal therapy alone. However, this study mainly focuses on clinical outcomes and does not explain in detail the psycholinguistic processes underlying language improvement. Therefore, further research is needed to examine how music influences specific language processes such as lexical retrieval and speech initiation in individuals with dementia.

Another important previous study is a review by Lam, Li, Laher, and Wong (2020) examined the effects of music therapy on patients with dementia (*Effects of Music Therapy on Patients with Dementia : A Systematic Review, Geriatrics, MDPI AG, 2020*). This review analyzed 82 studies, including clinical trials and other systematic reviews, to evaluate the impact of music therapy on cognitive function, behavioral and psychological symptoms, and quality of life in individuals living with dementia. The findings showed that music therapy was associated with significant improvements in verbal fluency, as well as reductions in anxiety, depression, and apathy, although it did not consistently improve overall cognition, daily functioning, or quality of life. Despite these positive outcomes, the authors noted limitations such as small sample sizes, lack of standardized music therapy methods, and high variability in measured outcomes, indicating a need for further research to clarify music therapy's benefits in dementia care.

Finally, one key study relevant to this research is *Music Enhances Autobiographical Memory in Mild Alzheimer's Disease* by

El Haj, Postal, and Allain (2012), published in *Educational Gerontology* (Taylor & Francis). This study investigated how music affects autobiographical memory in individuals with mild Alzheimer's disease by comparing recall performance under silence, standard classical music (Vivaldi's *Four Seasons*), and self-chosen familiar music conditions. The results showed that autobiographical recall was significantly better when participants listened to familiar music compared to silence or standard music, and that positive emotional content increased during music-evoked recall, suggesting that music enhances episodic memory retrieval (El Haj et al., 2012). These findings support the idea that familiar music can act as a powerful cue for memory recall by promoting emotional engagement and associative activation in memory networks, which are often impaired in dementia.

While this research focuses on memory recall rather than detailed linguistic processes, it provides empirical evidence that music can strengthen cognitive functions closely related to language, especially those linked to autobiographical memory and emotional engagement.

Based on the previous studies, it is clear that music especially familiar and emotionally meaningful music has a positive effect on memory, emotion, and communication in individuals with dementia. However, most existing research mainly focuses on general outcomes, such as improved mood, social interaction, or overall verbal activity, and relies largely on clinical assessments or behavioral observations. These studies rarely explain how music facilitates language at a deeper psycholinguistic level, such as the mechanisms involved in lexical retrieval, speech initiation, prosody, or pragmatic use of language. In other words, the research gap lies in the lack of a theory-driven, psycholinguistic explanation of language reactivation through music.

Addressing this gap, the present study offers novelty by integrating established psycholinguistic models such as Ulman's Declarative/Procedural model (2001), Collins and Loftus's Spreading Activation Theory, and Levelt's Speech Model Production (1989) to systematically explain the mechanism through which familiar music activates memory networks and supports language production in dementia.

By analyzing real-life interactions depicted in the documentary *Alive Inside* (Rossato-Bennett, 2014), this study is able to capture authentic and natural language use produced by a dementia patient in real-life settings. The documentary presents unscripted interactions between the patient and caregivers, which reflect genuine communicative conditions rather than controlled experimental situations. This makes the data more ecologically valid and relevant for psycholinguistic analysis. Furthermore, the film uniquely documents the impact of familiar music on cognitive and linguistic performance, allowing the researcher to observe changes in language ability before and after music exposure in a meaningful and contextualized way.

1.2 Statement of Problem

The problem lies in how language disorder in dementia and the role of familiar music are presented in a documentary context. Language decline in dementia is usually discussed in clinical or medical studies, but in this case it is shown through real-life interactions in a film. This creates a different perspective on how dementia patients use language and how familiar music can help them communicate. The questions posed in this research include:

1. What types of language disorders are produced by dementia patients as portrayed in the documentary *Alive Inside* (Rossato-Bennett, 2014)?
2. How does the familiar music play in facilitating psycholinguistic processes of lexical retrieval and verbal initiation in dementia patients in *Alive Inside* (2014)?

1.3 Research Purpose

Based on the formulation of the research question above, the researcher is intended:

1. To identify and describe the types of language disorders produced by dementia patients as portrayed in the documentary *Alive Inside* (Rossato-Bennett, 2014).
2. To identify the role of familiar music in facilitating psycholinguistic processes of lexical retrieval and verbal initiation in dementia patients as portrayed in the documentary film *Alive Inside* (2014).

1.4 Research Significances

The research significances of this Paper refers to the importance and relevance of this research both theoretically and practically.

a) Theoretical Significance

This study provides a theoretical contribution to the field of psycholinguistics by integrating cognitive models of language processing specifically Levelt's speech production model, Ullman's declarative/procedural framework, and the Spreading Activation theory with evidence from music-based language reactivation in dementia. Through this integration, the research enriches current understanding of how emotional and auditory stimuli can trigger linguistic processes, particularly lexical retrieval and speech

initiation, in individuals with cognitive decline. The findings are expected to strengthen the conceptual linkage between music cognition, memory, and language production, offering a new framework for explaining communicative recovery in neurodegenerative conditions.

b) Practical Significance

Practically, this study offers valuable insights for healthcare professionals, speech-language therapists, and caregivers in enhancing communication strategies for dementia patients. By demonstrating how familiar music can facilitate linguistic reactivation, the research supports the development of affordable, culturally adaptable, and non-invasive therapeutic interventions suitable for the Indonesian context. The results may also inform community-based care models, caregiver training, and policy initiatives that promote the use of music as a tool for maintaining communication and emotional well-being among the elderly population. Ultimately, the study aims to contribute to improving the quality of life for individuals living with dementia and to foster greater public awareness of the cognitive and linguistic benefits of music.

1.5 Definition of Key term

There are the clarifications of the key terms used in this research. The researcher clarify the key point, as follow:

Psycholinguistics is a field of linguistics that examines the mental and cognitive processes involved in language comprehension, production, and use, including how language is represented, accessed, and activated in the human mind.

Language disorders refers to an disorders in the ability to understand, produce, or use language effectively, which may affect lexical access, grammatical structure, fluency, or pragmatic function as a result of cognitive or neurological conditions.

Dementia is a neurodegenerative condition characterized by a progressive decline in cognitive abilities such as memory, attention, and language, leading to significant disruption in communication and social interaction.

Alive Inside is a documentary film directed by Michael Rossato-Bennett (2014) that explores the impact of familiar music on individuals with dementia, particularly in restoring emotional engagement, memory recall, and communicative responsiveness.

Familiar music refers to music that is personally meaningful and emotionally significant to an individual, often linked to autobiographical memories, which can function as a stimulus to activate cognitive, emotional, and language-related processes in dementia patients.