



Breaking Social Connections: Alzheimer's and the Erosion of Social Cognition

Dr. Leema Jacob

Assistant Professor, Department of Psychology, BSSS (The Bhopal School of Social Sciences) (Autonomous) College, Bhopal (M.P.) India

ARTICLE INFO

***Correspondence:**

*Dr. Leema Jacob
leemamsmi@gmail.com
Assistant Professor,
Department of
Psychology, BSSS College,
Bhopal, (M.P.)*

Dates:

*Received: 10-01-2026
Accepted: 21-01-2026
Published: 30-01-2026*

Keywords:

*Social cognition,
Alzheimer's disease,
rehabilitation, social
interactions, social-
cognitive skills*

How to cite:

*Jacob., L., (2025)
Breaking Social
Connections: Alzheimer's
and the Erosion of Social
Cognition
Mind and Society, 14(4):
65-71
doi10.56011/mind-
mri-144-202517*

Abstract

Alzheimer's disease is usually recognised for its catastrophic impact on human memory and cognition. However, a less discussed but equally important consequence is the distortion of social cognition. Social cognition refers to a set of cognitive abilities that enable people to understand, integrate, and respond appropriately in various social contexts. Social cognition encompasses skills such as theory of mind, emotion recognition, social judgment, and empathy. In Alzheimer's disease, as the brain tissues, especially the areas of the frontal lobe and the temporal lobes, degenerate, these social skills progressively decline. Patients may struggle to identify the emotions of their loved ones, misunderstand social cues, or show socially inappropriate behaviours. As a result, patients may experience intense frustration in social relationships, withdraw from social interaction, and feel social isolation. This erosion of social skills may lead to a "breakage of social cognition", not just with their friends or family, but also with the society where they live. This article helps us to evaluate these cognitive connections and find the appropriate remedies to mitigate the after effects of these symptoms. Recognising these social changes by caregivers is crucial because early interventions, social engagement therapies, and empathy-based care can help patients slow down their symptoms and improve their quality of life.

INTRODUCTION

Alzheimer's disease is a neurodegenerative disorder associated with severe memory loss, all the more so, which affects covert and overt behaviour, but beneath the surface lies another severe impact on the gradual deterioration of social cognition (Safiri et al., 2024). Social cognition is a set of mental processes generally involved in how individuals perceive, interpret, and react to social cues in various circumstances. In Alzheimer's patients, it encompasses the cognitive mechanisms that monitor their social behavior, including how they predict others' behavior in social situations (Porsteinsson et al., 2021; Mortby et al., 2021). Even in the early stages of this disease may struggle with recognizing facial expressions, and interpreting social cues. Later these symptoms can become a hindrance to leading a normal life in society.

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As the disease progresses, there will be impairment in recollecting names or there is a loss of essential skills that enable a person to make meaningful social interactions. This chapter explores the relationship between Alzheimer's disease and the ability of social cognition. Also, it briefly about how this disease erodes social cognitive skills such as theory of mind, interpersonal understanding of social norms, and intrapersonal understanding of social norms, and moreover, the quality of life.

Understanding Social Cognition

Social cognition is defined as the mental processes by which individuals identify, interpret, and respond appropriately to social circumstances. It also includes how individuals perceive others, process social cues, and respond in social contexts (Arioli et al., 2018; Beaudoin & Beauchamp, 2020). As a social being, social cognition is vital for everyday life, and it helps people to develop relationships, navigate complex emotions, and communicate effectively. The key components in social cognitive skills include emotion recognition, empathy, theory of mind, social perception, and social decision-making. All the more, theory of mind, including cognitive and affective components, is essential in social communication among AD patients (Fortier et al., 2018). Theory of mind is generally known for the ability to understand that people around us have their own beliefs, intentions, and desires that may be different from each other.

Emotion recognition allows people to recognize the emotions of others, often through body language facial expressions, or voice modulations and pitches (Barbato et al., 2015). Empathy enables individuals to emotionally connect with and helps them to respond to others' feelings, while social understanding involves interpreting social cues and understanding norms. Empathy is in two forms: cognitive and affective. Social life also involved decision-making. It guides human behavior by helping individuals to choose an appropriate response at the time of social interactions (Adolphs, 2008; Moudatsou et al., 2020). Specific brain areas are responsible for social cognition and its development throughout human life. They are particularly the prefrontal cortex, the temporo-parietal junctions, and the amygdala. They work together to integrate the complex social signals to guide the social behavior of the people (Edmonds et al., 2024). These regions of the brain are also related to memory and cognition, on which

degeneration may result in the cause of Alzheimer's disease.

An individual with Alzheimer's disease faces severe social functioning difficulties, and it may lead to impairment in understanding others' intentions, emotions, and social norms, which may lead to difficulties in their social functioning. In this case, understanding social cognition is important because it helps in making new approaches in clinical practices and caregiving among Alzheimer's patients. Clinicians can understand individual social cognitive skills, including their social functioning, and plan therapies through the proper assessment of social cognitive interventions (Joshi et al., 2023). It also helps to promote better, healthier mental health outcomes in Alzheimer's patients.

Alzheimer's Disease: An Overview

Alzheimer's disease is known to be a degenerative disorder that primarily affects the memory, cognition, and behavior of an individual (Kamatham et al., 2024). This disease is caused by the accumulation of amyloid plaques and tau tangles in the brain, leading to the degeneration of neuronal cells in the brain. Symptoms begin with mild memory disturbances and gradually decline to severe social cognitive impairment, mood changes, disorientation, and issues in daily functioning. Unfortunately, as in the case of every degenerative disease, currently there is no complete cure, but supportive therapies, training, and medication can reduce the symptoms and improve their quality of social functioning. Recent research gives importance to early detection, prevention, and finding more effective therapies and other treatment methods (DeTure & Dickson, 2019). Moreover, cognitive symptoms such as social abilities often decline and deteriorate, and it act as a hindrance to intervene in personal and caregiving interventions.

How Alzheimer's Affects Social Cognition

Alzheimer's disease has an important influence on social cognition and it refers to the psychological processes, including identifying, interpreting, and responding to social cues. Social cognition generally includes a set of abilities responsible for recognizing emotions, predicting others' social perspectives, maintaining social relationships, identifying social cues and expressions. As this disease progresses, these abilities gradually decline, leaving the patients with social isolation and increased

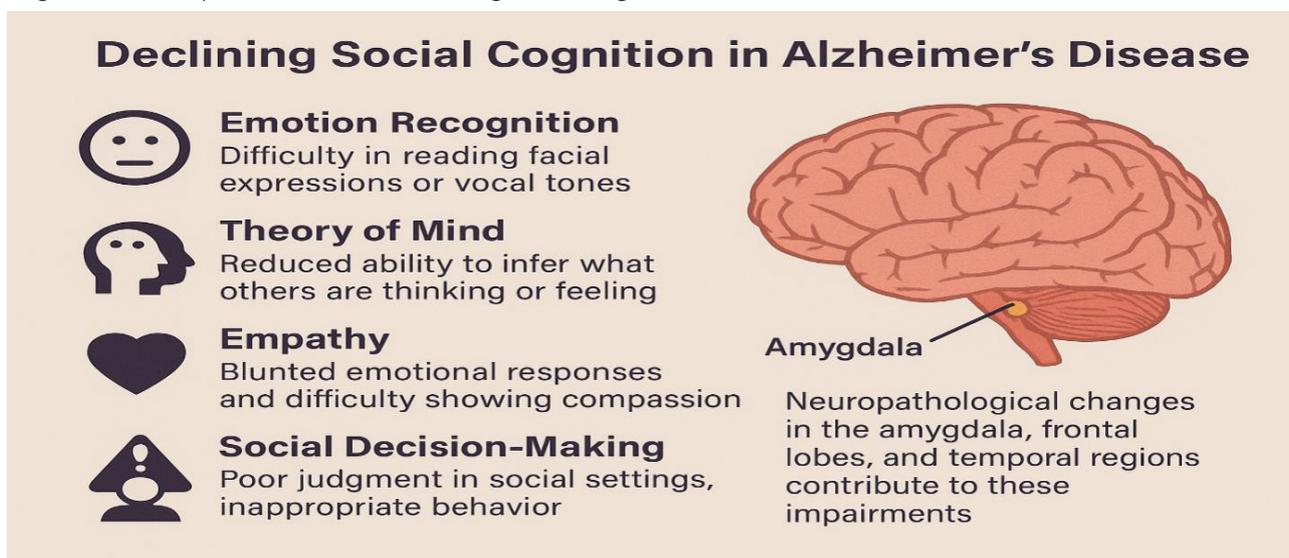
difficulties with their emotions (Kupferberg & Hasler, 2023). Emotional recognition is badly affected in AD Patients, characterized by severe difficulties in reading facial expressions, body language, and tone of voice (Vance et al., 2024). This may become a reason for the misinterpretation of emotions, social isolation, and reduced social communication (Beattie et al., 2014). Another significant area of social cognition affected is the "theory of mind." Theory of mind is the ability to

predict others' emotions, and an individual can understand that others have their own unique emotions, thoughts, intentions, beliefs, and likings. Alzheimer's disease may lead to the deterioration of the ability to feel empathy and exhibit appropriate behavior.

As AD progresses, a number of social cognitive skills decline:

Figure 1

Diagrammatic representation of declining social cognitive abilities.



Note. Adapted from "Schematic representation of the trajectory of cognitive development over the life-course," by S. W. Salthouse, 2019, (Anstey, 2016)

The Social Reverberations of Cognitive Decline

Cognitive decline in AD patients extends far beyond individual impairment; it severely affects social interaction and community engagement. They often experience an increase in social withdrawal because of the weakening of memory, reasoning, and communication skills. They struggle to follow conversations, experience social isolation, or misinterpret social cues due to frustration (Shanmugasundaram & Tamilarasu, 2023). Moreover, these symptoms can lead to loneliness, severe anxiety, and reduced quality of social life.

Another significant impact is characterised by the deterioration of social cognitive ability is that about the psychological processes that enable AD patients to identify and respond to others' feelings, intentions, and perceptions. Also, they face difficulties in recognizing facial expressions, theory of mind abilities, showing empathy, and making

relationships (Banaji et al., 2021; Kupferberg & Hasler, 2023). Caregivers and the dear and near ones frequently report the helplessness they witness, the tremendous changes they observe in AD patients while they provide care for them. Poor social interaction and apathy resulting from social cognitive decline can lead to odd behavioural expressions and which can create uncomfortable or even harmful circumstances in a social setting (Wilson et al., 2014; Ho et al., 2021). This may lead to reduced social participation in the community they live.

The consequences may be further carried over to the family dynamics and other places where considerable emotional support is given by their caregivers. Cognitive decline also alters family dynamics a resulting there arise a considerable social and emotional burden for the primary caregivers of the AD patients. The sudden shifting

of responsibilities can cause stress, burnout, and further financial strain, too (Vu et al., 2022). Thus, the social and cognitive reverberations of social cognition decline ripple outward, affecting not only the patient but also their immediate social and familial networks. Identifying those after effects is crucial for focusing psychotherapies, training interventions, and medications to foster their holistic well-being.

Addressing Social Cognition Deficits and AD Management

Navigating social cognition deficit in Alzheimer's disease presents unique hurdles that go beyond treating memory loss. As already discussed, social cognition involves the ability to recognize complex emotions, predict others' behavior (theory of mind), and react appropriately in various social situations, which is collectively known as social cognitive skills. When AD progresses, these abilities are distorted, complicating both treatment patterns and caregiving approaches. Another challenge is that the available cognitive therapies primarily focus on memory and reasoning, often overlooking social cognitive functioning. Clinical treatment, which is characterised by medication, offers limited advantages for social cognition deficit, leaving a notable gap in comprehensive support to AD patients (Lindeza et al., 2020). Additionally, the therapies and training provided to them to improve the social cognitive skills turned into a nightmare because they often find difficulties in following the activities and intervention strategies due to their clinical conditions characterized by their limited attention span (Costa-Font & Vilaplana-Prieto, 2022).

Furthermore, the progressive nature of this disease suggests that interventions continually adapt to weakening social abilities, making a long-term treatment plan difficult. Mitigating these tasks requires more individualized treatment strategies, a community support system, and greater focus on social and cognitive rehabilitation to improve inclusion and promote the quality of life for AD patients and their caregivers.

Assessment and Early Detection

Screening and early detection of Alzheimer's disease play a crucial role in the treatment of patient outcomes and planning effective caregiving strategies. Since Alzheimer's disease is a progressive degenerative disorder that affects memory,

cognition, and behavior, especially in social functioning (Vance et al., 2024). Detecting the in its earlier stages helps us to intervene in a timely intervention, and allows patients and their family members to prepare for future treatment and caregiving patterns. It potentially slows down the progression of AD through available treatment.

Assessment of AD disease typically begins with a thorough clinical history, which focuses on the duration of the social cognitive changes and the nature of the onset (Monteiro et al., 2024). Immediate Members of the family often identify these symptoms and provide essential information that helps the clinical practitioner to conclude that the individual shows subtle memory lapses, gradual behavioural changes, and disorientation. Assessment tools often used to identify these clinical symptoms include the Mini-Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA) (Jia et al., 2021; Wang et al., 2022). These tools are effective in evaluating general cognitive functions, especially memory, attention, perception, language, problem-solving solving and decision-making abilities in the patients. However, the Edinburgh social cognition test (ESCoT), generally used for assessing the level of social cognition in an advanced manner.

These neuropsychological testing provides a detailed and comprehensive evaluation, recognizing the specific areas of impairment and differentiating Alzheimer's from other diseases like dementia. Also, other imaging techniques, such as MRI and PET scans, allow clinicians to recognize structural and functional changes in different areas of the brain, particularly the hippocampus and amygdala, which are crucial for memory processing and social functioning (Costa-Font & Vilaplana-Prieto, 2022). Imbalance in blood and cerebrospinal fluid is also becoming biomarker to detect abnormal protein accumulations, which may become the hallmarks of AD pathology later.

Early detection of AD is crucial not only for medical reasons but also for planning psycho social treatment methods, which include therapy, interventions, and clinical trials. It allows the patients to make appropriate decisions for their personal and financial future (Shanmugasundaram & Tamilarasu, 2023). As psychologists and clinical practitioners, raising awareness about the early onset and symptoms may help to promote regular

social-cognitive assessments, particularly in risk populations, and thus may combat the growing risk and burden of AD disease globally.

There are several screening tools already available for the early identification of social cognitive impairments in clinical settings. Some of them are given below.

- Facial emotion Tasks
- Theory of mind tests
- Observational social interaction scales
- Need for social cognition scales
- Edinburgh social cognition test

Identifying low social cognition is crucial as it is considered as an early marker of AD progression, aiding in timely intervention and treatment.

Therapeutic Strategies and Interventions

Treatment and care interventions for Alzheimer's patients usually focus on managing symptoms, slowing the progression of degeneration of the neuronal cells and improving the quality of life (Hafiz et al., 2023). However, there is no cure for Alzheimer's disease currently; treatments and interventions aim to address social, cognitive, and behavioural symptoms.

Pharmacological treatments primarily based on medication, which enable the patients to improve the neuronal communication and thus reduce the pace of the degeneration of the brain, can reduce. The medicine used for this purpose is cholinesterase inhibitors, named after donepezil, rivastigmine, and galantamine (Zhang et al., 2024). A few monoclonal antibodies targeting amyloid plaques, like lecanemab, have also been found to be effective in slowing down the symptoms of AD in its early stages (Chowdhury & Chowdhury, 2023).

Non-pharmacological interventions are characterised by cognitive stimulation and training, which is equally important as pharmacological approaches. Cognitive stimulation therapy (CST), Social cognitive skills training (SCST), memory training, and activities that stimulate cognition help to maintain their social and cognitive functioning. Behavioral therapies generally address emotional disturbances, anxiety, agitation, and other behavioral symptoms (Luo et al., 2023). Caregiver education and environmental modifications can contribute significantly to reducing confusion and promoting mental health among AD patients.

Treatment plan for AD patients also includes supportive interventions that solely give importance to occupational therapy to assist them in their daily tasks, and improve their physical activities. This may help them to enhance the mental and physical well-being (Smallfield et al., 2024). Furthermore, a holistic, personalised treatment plan combined with pharmacological, psychological, and social interventions can be the best management approach for treating AD to enhance the patient's social cognition.

CONCLUSION

In conclusion, AD extends far beyond the so-called symptoms as similar in Dementia, reaching into the core of human interactions. This profound symptom severely affects not only the patient but also their social connections, family interactions, and peer relationships. And furthermore, leading to social withdrawal and emotional strain. Identifying social cognitive decline is crucial in planning effective treatment that goes beyond medication, addressing deeper social, cognitive, and emotional needs of the AD patients. Alzheimer's disease is not just a loss of memory and cognitive abilities, but it is a fading of social connections and bonds. The erosion of social cognitive skills in AD patients diminishes the very essence of social connections of the individual, making it important to identify, assess, and address this disease early on its onset. By escalating the social dimensions of Alzheimer's disease, one can foster a more compassionate approach in care, improve quality of life, and protect dignity.

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