Reconstructing Social Connection Interventions for People with Dementia: Preserving Core Active Components While Reducing Cognitive and Implementation Burdens

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Posted Date: 1 January 2026

doi: 10.20944/preprints202601.0056.v1

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 doi:10.20944/preprints202601.0056.v1

Article

Reconstructing Social Connection Interventions for People with Dementia: Preserving Core Active Components While Reducing Cognitive and Implementation Burdens

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Abstract

Social connection has been consistently associated with slower decline in cognitive and functional abilities, reduced behavioral and psychological symptoms of dementia (BPSD), and delayed institutionalization in people with dementia, as demonstrated by multiple longitudinal and epidemiological studies. However, conventional interventions that promote social participation and interaction are often designed on the assumption that individuals retain sufficient motivation, attention, executive function, and interpersonal coordination skills—capacities that are typically compromised in people with dementia, making implementation and continuation of such interventions difficult. Consequently, interventions that are theoretically effective often fail to function adequately in real-world clinical and care settings. This paper aims to reconceptualize social connection interventions for people with dementia by systematically distinguishing between "core active components that drive therapeutic effects" and "ancillary elements that impose excessive cognitive or operational burdens." Based on an integration of observational studies, intervention research, and neuropsychiatric evidence, we propose an implementation-adapted model comprising three minimal components: (1) brief daily face-to-face interactions lasting approximately 5–10 minutes; (2) support to ensure at least weekly contact with someone outside the household; and (3) person-centered communication that emphasizes name usage, eye contact, and affirmative responses. These components do not directly modify the neurodegenerative pathology of dementia. However, they hold essential value in mitigating "accelerating factors" of disease progression—such as social isolation, apathy, depression, and BPSD. As a low-cost, non-pharmacological intervention that prioritizes feasibility, safety, and sustainability, this model is considered to have high practical utility for both clinical practice and long-term care policy.

Keywords: dementia; social connection; non-pharmacological intervention; BPSD; person-centered care; implementation science; caregiving practice; social isolation

 doi:10.20944/preprints202601.0056.v1

1. Introduction

1.1. Social Connection and Long-Term Prognosis in Dementia

Dementia is a progressive condition characterized not only by core cognitive impairments such as memory loss and executive dysfunction, but also by social withdrawal, apathy, and a decline in interpersonal communication abilities. These social and behavioral changes have long been viewed as inevitable consequences of neurodegeneration. However, recent research suggests that such changes may not merely be outcomes of dementia but may themselves function as independent prognostic factors that influence the pace and trajectory of disease progression.

Epidemiological and longitudinal studies have repeatedly reported that social isolation and the contraction of social networks are significantly associated with accelerated cognitive decline, reduced activities of daily living (ADL), earlier institutionalization, and even increased mortality risk in older adults, including those with dementia (Crooks et al., 2008; Röhr et al., 2020). For instance, Crooks et al. (2008), analyzing data from a large-scale cohort of older adults, demonstrated that individuals with smaller social networks had higher risks of cognitive decline and subsequent dementia onset. Röhr et al. (2020) similarly found that a reduction in social network size was associated with faster cognitive decline, independent of baseline cognitive function.

In addition, a longitudinal study of older adults in Japan found that individuals with very low levels of daytime activity and interpersonal contact had more than twice the risk of mortality (Sugisawa et al., 1994). These findings suggest that lack of social interaction may affect not only functional outcomes but also life expectancy in older populations, including those with dementia.

Importantly, these associations cannot be fully explained by declines in physical function or the severity of comorbidities. Many studies have shown that even after adjusting for age, sex, educational history, physical illness, and depressive symptoms, social isolation and network contraction remain as independent prognostic factors (Crooks et al., 2008; Röhr et al., 2020). This implies that social connection is likely not merely a "peripheral factor" in the course of dementia, but rather a modifiable determinant that plays a central role.

1.2. Limitations of Conventional Social Participation and Interaction Interventions

In light of these findings, a variety of interventions aimed at enhancing social connection have been proposed. These include group recreational activities, participation in community programs, day care services, structured social therapies, reminiscence therapy, and group cognitive stimulation therapy. In controlled research settings, such interventions have been reported to yield some improvements in emotional stability and quality of life (QOL).

However, their reproducibility in real-world clinical and caregiving settings is limited. One major reason is that these interventions often implicitly assume the preservation of cognitive capacities that are, in fact, frequently impaired in individuals with dementia. Specifically, the following assumptions are commonly embedded in intervention design:

First, they assume that sustained attention and active participation are possible. Many programs require 30 minutes to an hour or more of engagement, but individuals with dementia often have markedly reduced attention spans, making prolonged participation likely to induce fatigue or confusion.

Second, they assume the ability to understand roles within a group and adjust behavior in social contexts. Group activities require the capacity to read others' actions and coordinate one's role accordingly, but these abilities are frequently compromised early in dementia due to declining frontal lobe function.

Third, they assume the maintenance of a sense of achievement and success in the activity. In reality, task failures or comparisons with others can provoke shame, anxiety, or resistance, potentially triggering BPSD (Tible et al., 2017).

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Thus, paradoxically, increasing social stimulation may not always be beneficial for people with dementia. As a result, social participation interventions that are theoretically sound may become impractical in real-world settings and are often discontinued prematurely.

The aim of this paper is not to propose entirely new forms of social therapy or participation programs. Rather, it seeks to reconstruct existing social connection interventions in a manner that is congruent with the cognitive and emotional realities of dementia, and to develop a framework that is actually workable in practice.

2. Constraints on Social Interventions in Dementia

2.1. Cognitive Constraints: Decline in Attention, Executive Function, and Role Understanding

Among the most fundamental factors that hinder the implementation of social interventions in people with dementia are impairments in attention and executive function. Shortened attention span, reduced working memory capacity, and diminished task-switching ability are features that appear relatively early in many types of dementia, including Alzheimer's disease. These impairments make individuals vulnerable to information overload in social situations involving extended conversations or simultaneous stimuli.

Many conventional social participation programs assume that participants can engage in activities for 30 minutes or more and comprehend contextual cues. However, people with dementia often struggle to retain the goals and flow of an activity, leading to confusion or fatigue during participation. Consequently, they may become intermittently engaged, refuse to continue, or leave the situation altogether.

Moreover, social settings demand the ability to understand one's relationship to others and recognize the roles expected of oneself. Such role comprehension and grasp of social context are significantly impaired due to declining frontal lobe function. Therefore, interventions that require group participation or role-sharing are likely to impose excessive cognitive burdens on individuals with dementia.

2.2. Emotional and Behavioral Constraints: Overstimulation and Induction of BPSD

In dementia, emotional regulation is often impaired, leading to increased sensitivity to external stimuli. Social stimuli such as noise, movement of people, or unpredictable interactions can easily provoke anxiety, fear, or agitation, and may trigger behavioral and psychological symptoms of dementia (BPSD).

It is well-established that BPSD is influenced not only by neurodegeneration itself but also by environmental factors and interpersonal interactions. Tible et al. (2017), in a comprehensive review on BPSD management, pointed out that overstimulation and evaluative or directive interactions may exacerbate agitation, aggression, or refusal behaviors.

A particularly important point is that even when social interventions are carried out with good intentions, poor design can worsen BPSD. For instance, encouragement to participate in activities may be perceived by the person with dementia as a demand for something they are unable to do or as an evaluation of their abilities, leading to feelings of anxiety, shame, or anger.

Thus, in social interventions for people with dementia, if "increasing social stimulation" becomes an end in itself, it may paradoxically induce emotional instability or behavioral disturbances.

2.3. Social Participation Interventions as Implementation Failures

Given the cognitive and emotional constraints discussed above, the reason why conventional social participation interventions often fail in clinical practice is not necessarily due to theoretical inadequacies, but rather to a mismatch between intervention conditions and patient characteristics.

 doi:10.20944/preprints202601.0056.v1

In other words, many social interventions are implicitly designed for "older adults without dementia" or those with only "mild cognitive impairment." As a result, the required cognitive demands often exceed the realistic capabilities of people with dementia. This issue represents a type of "implementation failure," wherein an intervention is theoretically effective but fails in real-world settings due to contextual incompatibility. Similar patterns have been observed in sleep and exercise interventions for dementia as well.

Therefore, rather than increasing the quantity or complexity of interventions, what is essential is to deliberately remove elements that impose excessive burdens on individuals with dementia and redesign interventions to consist only of components that are truly implementable.

3. Distinguishing Core Active Components from Excessive Implementation Burdens

3.1. Core Active Components of Social Connection Interventions

Evidence that social connection influences dementia prognosis is supported by numerous epidemiological and longitudinal studies. However, what these studies suggest is not that "complex and sophisticated social activities" are necessary, but rather that the presence of social stimuli itself is critical.

Crooks et al. (2008) found that the size of a person's social network was associated with cognitive decline and the risk of developing dementia, with the effect determined more by the existence and breadth of the network than by the quality or frequency of specific interactions. Similarly, Röhr et al. (2020) reported that a shrinking social network was linked to faster cognitive decline, regardless of baseline cognitive function.

Synthesizing these findings, the core active components of social connection interventions can be summarized as follows:

First, the presence of face-to-face social stimuli. Simply sharing space with others and receiving basic social stimuli—such as eye contact and speech—can activate emotional and attentional neural networks.

Second, emotional safety. The experience of being respected and not judged helps reduce anxiety and hypervigilance, thereby suppressing the emergence of BPSD (Kitwood, 1997).

Third, the experience of being recognized as a social being. Minimal forms of social acknowledgment—such as being addressed by name or having one's presence affirmed—may help suppress the progression of apathy.

Crucially, the effectiveness of these components does not necessarily correlate with the duration or complexity of interaction. Even short encounters, if well-designed, may yield more stable benefits than interventions that are cognitively overwhelming.

3.2. Components That Should Be Removed Due to Excessive Implementation Burden

Many social connection interventions include elements that unnecessarily increase implementation burden. Although these elements may be appealing from a theoretical standpoint, they often constitute major barriers to success in people with dementia.

First, prolonged and high-frequency interactions. Long sessions deplete attentional resources and increase the risk of fatigue and confusion.

Second, demands for group conformity or role performance. Group-based activities often require an understanding of social roles and coordination with others—functions that are significantly impaired due to frontal lobe dysfunction in dementia.

Third, emphasis on the quality or outcomes of conversation. Interactions that stress accuracy or achievement can lead to experiences of failure or shame, increasing the risk of refusal or BPSD (Tible et al., 2017).

In this paper, such elements are not seen as components that should be improved, but as components that should be *deliberately removed*. To make social connection interventions feasible, the

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priority should be simplification, rather than elaboration. Supplementary Figure S2 provides a comparative overview of conventional social participation/intervention models and the restructured model proposed in this study.

4. Reconstructed Model of Social Connection Interventions

The overall structure and daily implementation flow of this model are illustrated in Supplementary Figure S1. Based on the constraints discussed in the previous chapters and the identification of core active components in social connection interventions for people with dementia, this chapter presents a reconstruction model that prioritizes implementation feasibility. This model does not seek to expand the quantity or diversity of social stimuli. Instead, it retains only the **minimal components that are reliably workable** for individuals with dementia.

4.1. Minimal Component ①: Daily 5–10 Minute Face-to-Face Interaction

4.1.1. Specific Actions

Engage in face-to-face interaction for approximately 5 to 10 minutes each day. The content, richness of topics, amount of information, and logical consistency of the conversation are not required. Simple, low-demand topics—such as weather, meals, or everyday events—are ideal. Periods of silence are also acceptable and not regarded as problematic.

4.1.2. Theoretical Rationale

Epidemiological and longitudinal studies have demonstrated that reduced frequency of interpersonal contact is associated with cognitive and functional decline, as well as increased mortality risk (Sugisawa et al., 1994; Crooks et al., 2008). A key finding from these studies is that **the absence of social contact itself**, rather than the lack of complex social activity, is identified as a risk factor.

Even short interactions provide visual and auditory social stimuli that may activate emotional and attentional neural networks. Such stimulation may help prevent the reinforcement of apathy and inactivity, which often lead to further functional decline.

4.1.3. Role in Implementation

The 5–10-minute duration does not represent the "optimal dose" of intervention but reflects the lower bound of feasibility based on attention span in dementia, real-world care settings, and risk of triggering BPSD. Similar to sleep and exercise interventions, **the priority is to ensure consistency and sustainability over quantity**.

4.2. Minimal Component ②: Weekly Contact with Someone Outside the Household

4.2.1. Specific Actions

Ensure at least one interaction per week with someone other than a cohabiting family member. This may include relatives, friends, care workers, or community members. The interaction does not need to be face-to-face; video calls or short visits are also acceptable.

4.2.2. Theoretical Rationale

Shrinking social networks are associated with functional decline and higher risk of institutionalization among older adults, including those with dementia (Crooks et al., 2008; Luppa et al., 2010). In particular, a lack of contact with non-family individuals may lead to increasing monotony in social contexts, reducing opportunities for emotional engagement and attentional arousal.

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The "once-a-week" frequency is set as a **realistic minimum unit** for maintaining social stimulation. The aim is not to promote frequent outings or extended socialization but rather to **prevent complete closure of the social network**.

4.2.3. Role in Implementation

This component is largely realized through **coordination by caregivers and support systems**, rather than through direct effort by the person with dementia. Accordingly, it should be positioned not as an "intervention imposed on the patient," but as a **design requirement embedded in the care environment**.

4.3. Minimal Component ③: Person-Centered Communication

4.3.1. Specific Actions

During interactions, address the person by name whenever possible, maintain eye contact, and prioritize affirmative and empathetic responses over correction or instruction. Do not evaluate the accuracy or coherence of the person's statements. The fundamental principle is to "affirm their presence."

4.3.2. Theoretical Rationale

Person-centered care is a core concept in dementia support and has been shown to promote emotional stability and reduce BPSD (Kitwood, 1997; Tible et al., 2017). Addressing someone by name and offering affirmative responses sends emotional signals of **being respected and feeling safe**, which can reduce anxiety and hypervigilance.

BPSD is often influenced more by interpersonal and environmental factors than by neurodegeneration alone. Therefore, the key implementation strategy is not to "enhance" communication quality but to **eliminate negative elements** such as correction, judgment, or confrontation.

4.3.3. Role in Implementation

This component requires **no additional time or resources** and can be carried out simply by modifying existing interaction styles. In this sense, it is conceptually similar to **"environmental adjustments"** used in sleep or exercise interventions.

5. Implementation, Safety, and Cost

5.1. Implementation Feasibility

The social connection intervention model proposed in this paper requires **no specialized training or equipment**. Its most significant advantage lies in the fact that it can be implemented by family caregivers, care workers, and facility staff as a natural extension of everyday care.

Moreover, the intervention is composed of **short-duration and low-frequency components**, and therefore does not significantly increase caregiver burden. In fact, by contributing to the stabilization of BPSD and reduction of refusal behaviors, it may ultimately **reduce long-term caregiver burden**.

5.2. Safety

This model is **non-invasive** and poses no physical risks. It is explicitly designed to exclude excessive stimulation and evaluative interactions, thus minimizing the risk of triggering BPSD.

Potential risks in social interventions include overstimulation and fatigue, but in this model, **strict limitations on intervention quantity** are in place to prevent such risks.

5.3. Cost

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This model requires **minimal additional medical resources or financial investment**. It can be implemented entirely within existing care frameworks, making it **highly cost-effective**. This is one of the key reasons why social connection interventions, when framed as non-pharmacological strategies, may occupy an important place in long-term care policy.

6. Clear Boundaries (Limitations)

The reconstructed model of social connection intervention proposed in this paper is a non-pharmacological approach aimed at mitigating accelerating factors of dementia progression, such as social isolation, apathy, and BPSD. However, this model has **clear and explicit limitations**.

First, this intervention does **not directly modify the neurodegenerative pathology** of dementia. To date, no randomized controlled trial (RCT) has definitively shown that social connection interventions can suppress amyloid deposition or tau pathology. Therefore, it is not appropriate to position this model as a disease-modifying treatment.

Second, this intervention does **not guarantee significant improvements in cognitive test scores**, such as MMSE or MoCA. The primary effects of social connection interventions are expected in emotional, behavioral, and functional domains, and they are not well suited to evaluation frameworks that prioritize short-term changes in cognitive scores as primary outcomes.

Third, **the optimal frequency, duration, and modality** of the intervention remain undefined. The "5–10 minutes per day" and "once a week" benchmarks presented in this paper do not represent optimal doses, but rather the **minimum thresholds prioritized for feasibility and safety**. Appropriate adjustments must be made based on the severity of dementia, living environment, and caregiving context.

Fourth, social connection interventions are **not universal solutions** for all cases of BPSD. In individuals with prominent hallucinations or delusions, or those who display high irritability, social stimuli may worsen symptoms. As such, the application of this model must always be based on **individualized assessment**.

Given these points, the reconstructed model presented here should be used with **realistic expectations**, clearly distinguishing between what it **can** and **cannot** achieve.

7. Discussion and Conclusion

7.1. Discussion: Reframing Social Connection from "Treatment" to "Condition Management"

The central argument of this paper is that social connection interventions for people with dementia should not be positioned as **therapeutic interventions** aimed at restoring capacity or enhancing social functioning. Instead, they should be reframed as **condition-modifying interventions** intended to control the factors that unnecessarily accelerate the course of dementia.

Conventional social participation interventions have typically aimed to **increase the quantity and diversity of social stimuli**. However, in individuals with dementia, excessive stimulation and cognitively demanding social demands can trigger fatigue, anxiety, refusal, and BPSD, leading to intervention failure. This structural issue is essentially identical to what has been described as "**implementation failure**" in other non-pharmacological areas such as sleep and exercise interventions.

The reconstruction model proposed in this paper does **not aim to expand** social stimulation. Rather, it focuses on **extracting only the core active components** while **deliberately removing excessive implementation burdens**. This approach is consistent with other domains of dementia care, including non-pharmacological interventions like sleep, exercise, and environmental adjustments.

7.2. Implications for Clinical Practice

In clinical and caregiving settings, this model has the following practical advantages:

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First, it is **"minimal and clearly defined."** The three components—daily 5–10 minute face-to-face interaction, weekly contact with non-cohabiting individuals, and affirmative, empathetic communication—are easy to understand and have high implementability for family caregivers and care staff.

Second, it **minimizes the risk of failure experiences.** By avoiding demands for achievement or evaluation-based interaction, the intervention reduces the likelihood of refusal or BPSD.

Third, the model is **applicable across a wide range of dementia severity**, including mild, moderate, and even advanced stages, with appropriate adjustments.

7.3. Implications for Policy and System Design

The reconstruction of social connection interventions also has important implications for **long-term care policy**. This model requires no additional medical resources or costly infrastructure, and can be implemented within **existing caregiving systems**, making it highly cost-effective.

Furthermore, suppressing BPSD and delaying hospitalization or institutionalization may lead to **substantial reductions in healthcare and long-term care costs**. For these reasons, social connection interventions should be positioned not as optional "add-ons," but as **foundational components** of dementia care systems and policy frameworks.

7.4. Conclusion

Social connection interventions for people with dementia should not be designed to restore social functioning or cognitive abilities. Instead, the goal should be to maintain a state in which **risk factors for accelerated progression**—such as social isolation and apathy—are **less likely to take hold**.

The reconstruction model presented in this paper offers a **minimalist**, **person-centered**, and **sustainable** non-pharmacological framework that can be naturally integrated into daily care. Like sleep and exercise interventions, it represents a **"small but reliable"** approach that may serve as a foundational pillar of effective dementia care.

Supplementary Materials: The following supporting information can be downloaded at the website of this paper posted on Preprints.org.

Appendix

Implementation Manual for Supporting Social Connection in People with Dementia
(Practical Guide for Care and Support Settings)

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1. Purpose and Positioning

This manual provides implementation guidelines for safely and sustainably delivering social connection support to individuals with dementia in home and institutional care settings.

This program does **not aim to increase social participation or interaction volume**, but is instead a non-pharmacological, implementation-adapted intervention primarily designed to **suppress progression-accelerating factors** such as:

- Social isolation
- Apathy
- Emotional instability
- Behavioral and psychological symptoms of dementia (BPSD)

Intended users of this manual include:

- Care staff in residential or home-based care settings
- Family caregivers supporting individuals with dementia
- Health and welfare professionals seeking to integrate social connection into daily care

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Note: This is not a clinical trial protocol, but an implementation guide for routine care.

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2. Target Population

Inclusion criteria:

- Individuals with mild to moderate dementia
- Those who respond to simple verbal or nonverbal cues
- Individuals who can engage within daily life contexts

Exclusion or caution required:

- Persistent hallucinations or delusions that worsen with social interaction
- Severe irritability or agitation making safe interaction difficult
- Medically unstable conditions such as acute delirium

Clinical judgment should always take precedence.

Even in advanced dementia, the program may be applied in an adapted form focused on respecting presence, regardless of verbal responsiveness.

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3. Core Design Principles

This program is based on the following four principles:

1. **Minimizing cognitive load**
   - Do not require memory or comprehension
   - Do not assess topic relevance, correctness, or response speed
2. **Ensuring emotional safety**
   - Avoid correction, instruction, or judgment
   - Immediately reduce or stop interaction if anxiety or confusion appears
3. **Predictability and repeatability**
   - Interactions should occur in a consistent manner
   - Avoid making interactions "special events"
4. **Caregiver-initiated**
   - Do not depend on patient's autonomy or initiative
   - Accept "non-responsiveness" as a valid form of engagement

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4. Overall Implementation Structure

Recommended frequency and duration:

- Face-to-face interaction: **5–10 minutes daily**
- Contact with non-cohabiting individuals: **at least once per week**
- Verbal and social contact: **integrated throughout daily care**

Setting:

- Familiar living environment for the person
- Quiet, low-stimulation area
- Minimize movement or special preparation

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5. Core Support Components (3 Essentials)

5.1 Daily 5–10 Minute Face-to-Face Interaction

Purpose:

- Prevent complete social isolation
- Provide minimal emotional and attentional stimulation

Method:

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- Preferably same caregiver at same time each day
- No requirement for specific content (weather, small talk, or silence is acceptable)

Sample phrases:

- "Hello."
- "I'm here with you."
- "Let's spend a little time together today."

Engagement is valid even without verbal response.

5.2 At Least Weekly Contact with Non-Family Members

Purpose:

- Prevent complete contraction of social network
- Maintain novelty and social context diversity

Method:

- Contact with relatives, friends, neighbors, facility staff, etc.
- In-person or video call both acceptable
- 5–15 minutes is sufficient

Caution:

- Avoid emotionally intense reunions or large groups
- Do not ask "Do you remember me?"

5.3 Person-Centered Communication

Purpose:

- Prevent or reduce BPSD
- Maintain a sense of safety and dignity

Key behaviors:

- Call the person by name
- Make eye contact as possible
- Prioritize affirmation and empathy over correction

Avoid:

- Correcting mistakes
- Testing questions
- Requests that require memory or understanding

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6. Interventions to Explicitly Exclude

The following are **not included** in this program:

- Forced participation in group activities
- Interactions that evaluate communication ability or responsiveness
- Cognitive training or task-based conversations
- Approaches aiming to "restore sociability"

*This is not about excluding social stimulation, but **restructuring its format.***

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7. Criteria for Adjustment and Discontinuation

Adjustable factors:

- Duration (may be shortened)
- Number of people (1-on-1 is standard)
- Frequency of interaction

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Discontinuation criteria:

- Clear signs of anxiety, refusal, or agitation
- Increased fatigue or confusion
- Worsening BPSD symptoms

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8. Safety and Burden Management

- Physical risk is **extremely low**
- Primary risk is **overstimulation**
- **Avoid perfectionism** to prevent caregiver burnout

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9. Alignment with Evidence

This manual is based on existing evidence regarding:

- The association between social isolation and mortality, functional decline, and institutionalization
- The link between shrinking social networks and cognitive/functional decline
- The role of person-centered care in reducing BPSD

All content is **restructured** to match the **realities of dementia care implementation**.

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10. Use in Research and Practice

Research applications:

- Supplementary material for intervention content
- Clear documentation of implementation method
- Description of fidelity (adherence to protocol)

Practical applications:

- Simple manual for professional caregivers
- Guide for family caregivers
- Tool for sharing care strategies

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 doi:10.20944/preprints202601.0056.v1

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