

The Internet-Based Conversational Engagement Trial (I-CONNECT): Theoretical Framework and Results

(www.I-CONNECT.ORG)



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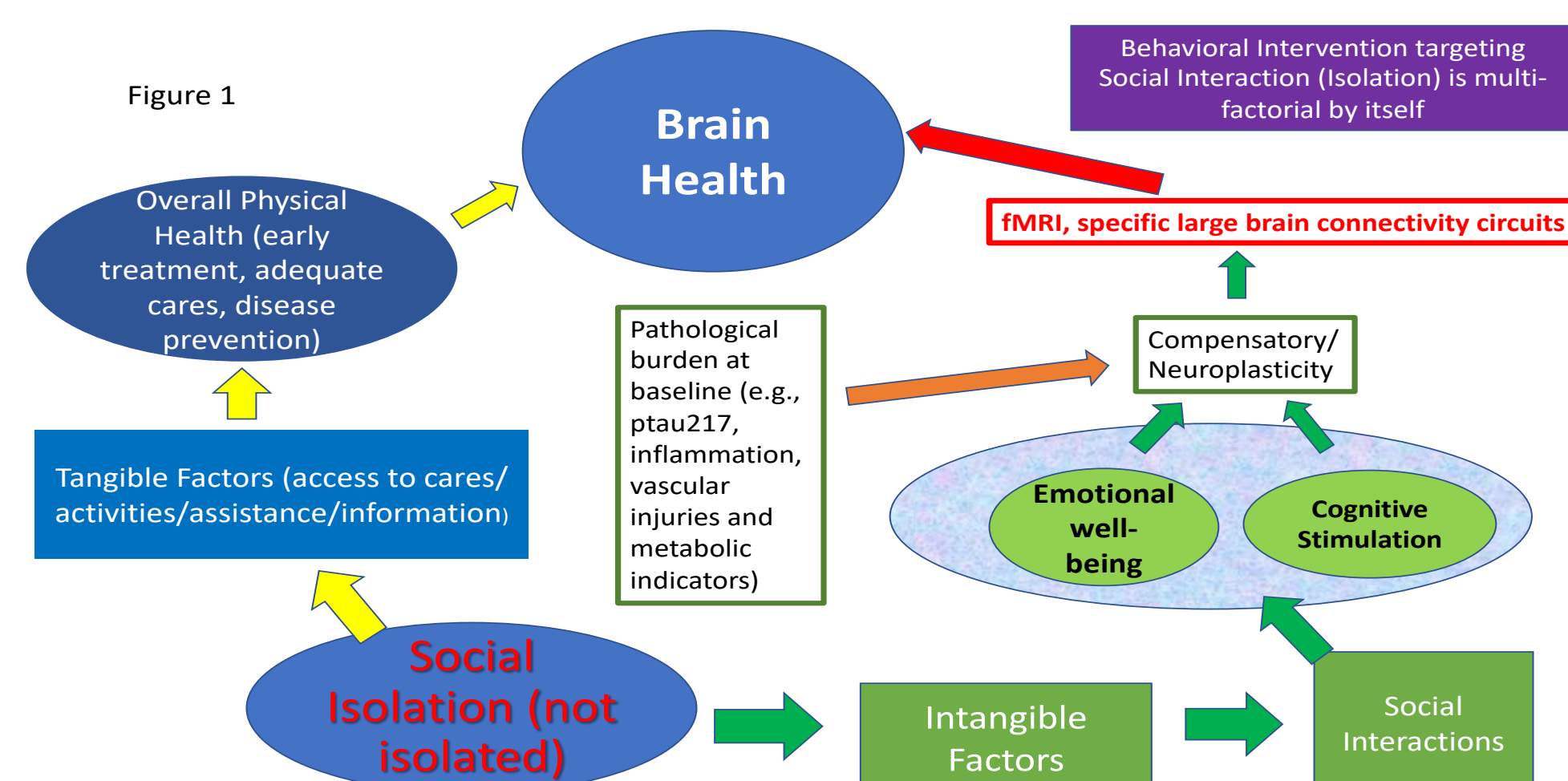
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INTRODUCTION

- ❖ **Social isolation** is a known risk factor for dementia, but it involves **multifactorial constructs**—such as tangible support and intangible support that includes cognitive stimulation and emotional support—making it difficult to tease out the underlying mechanisms through epidemiological studies alone.
- ❖ **Randomized controlled trials** offer a critical opportunity to investigate how and why social isolation or interaction affects cognitive function, and to solidify the evidence on **whether reducing social isolation (dementia risk reduction) can enhance cognition, even in older age**.
- ❖ **Social interactions**, specifically **conversational** interactions (a core component of human interactions) may stimulate brain networks and enhance cognitive function.
- ❖ The Internet-Based Conversational Engagement Clinical Trial, (I-CONNECT, www.I-CONNECT.org, NCT02871921 PI: Dodge) delivered online semi-structured conversation sessions to socially isolated older subjects.
- ❖ 186 participants (mean age 80) were randomized (**MCI**, N=100, **Normal Cognition (NC)** N=86) between 2018 and 2020. The study was completed in 2022, and the topline results were published in 2024 (1).

This poster presents the theoretical framework, our approach to delivering standardized yet natural conversations, and key findings to date.

THEORETICAL FRAMEWORK



This study is grounded in the **Cognitive Reserve Theory**, which posits that increased neural connectivity mitigates the clinical impact of neurodegeneration (Park & Bischof, 2013; Stern, 2012).

- Park, D. C., & Bischof, G. N. (2013). The aging mind: Neuroplasticity in response to cognitive training. *Dialogues in Clinical Neuroscience*, 15(1), 109–119
- Stern, Y. (2012). Cognitive reserve in ageing and Alzheimer's disease. *The Lancet Neurology*, 11(11), 1006–1012.

INTERVENTION

- ❖ Recruited socially isolated subjects (defined by Lubben Social Network score and frequency of meaningful conversation per week), aged 75 and older, MCI or normal cognition (NC) (see reference (1)).
- ❖ **Experimental (intervention) group**: Participants engaged in **30 minutes of semi-structured conversation with trained interviewers** (conversational staff) 4 times per week for 6 months (high dose) and twice per week for an additional 6 months (maintenance dose). They also received a **weekly 10-minute phone check-in** to report changes in health, social engagement outside of the intervention and mood.
- ❖ **Control group**: Participants received only the **weekly 10-minute phone check-in**.
- ❖ Provided semi-structured conversations with trained staff to standardize interactions, requiring participants to understand interviewers and organize their thoughts. **Each day focused on a specific conversation theme, but once started, the conversation could flow naturally.**

AN EXAMPLE OF THE CONVERSATIONAL SESSION



1. Each session begins with a specific daily theme to spark conversation. The example above is one of the 150 themes we provided.

2. Under each theme, participants can choose from three subtopics to begin the conversation. We then show the associated picture.



3. While conversations can extend beyond the daily topic, each session includes the following components:

- ❖ **Reminiscence** (e.g., recalling memories related to the topic)
- ❖ **Vocabulary enhancement** (e.g., naming various farm animals)
- ❖ **Clinical thinking** (e.g., discussing pros and cons of using animals for entertainment)

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KEY FINDINGS

TOPLINE RESULTS PAPER (THE GERONTOLOGIST, 2024)(1) REPORTED:

- ❖ **Primary outcome**: The MCI experimental group showed a higher MoCA score (the primary outcome) than the control group by 1.75 points (Cohen's d=0.73, P=0.03) at Month 6
- ❖ **Secondary outcome**: The NC experimental group showed higher semantic fluency scores (language-based executive function) than the control group by 2.56 points at Month 6 (P=0.03)
- ❖ **Exploratory outcomes**: The social satisfaction factor score assessed by the NIH Toolbox emotional battery improved in both the control and experimental groups. This suggests that weekly 10-minute phone calls may effectively enhance emotional well-being.
- ❖ Out of 5 **large brain networks measured by resting state functional MRI** (Default Mode, Dorsal Attention, Fronto-Parietal, Language and Salience networks), Dorsal Attention network connectivity increased among the experimental group compared with the control group, suggesting that conversational engagement may strengthen neural systems involved in **goal-directed attention and cognitive control**.

WU et al., (2024)(Reference #2) REPORTED:

- ❖ The top 30% of the respondents could **delay the cognitive decline by at least 6 months** by applying the individual treatment response (ITR) method.

YU et al., (2024)(Reference #3) REPORTED:

- ❖ Time spent outside the home—a proxy for social activity—increased during and after the intervention in the experimental group compared to the control group, **suggesting that the benefits of the intervention extend beyond cognitive outcomes**.

CHEN et al., (2026) (Reference #4) REPORTED:

- ❖ A natural language processing measure, semantic noise (SN), was a linguistic outcome to quantify conversational patterns and assess intervention-induced changes. SN decreased in the MCI group, indicating that their conversational patterns became more similar to those of the NC group. This study is the first to demonstrate the use of linguistic measures as behavioral intervention outcomes. (Reference #4)

CONCLUSIONS

Engaging conversations may enhance cognitive function even in older adults. If implemented widely in community and clinical settings, this low-risk intervention has the potential to reduce the population burden of dementia.

REFERENCES:

- 1) Dodge HH., et al., Internet-based conversational engagement randomized controlled clinical trial (I-CONNECT) among socially isolated adults 75+ years old with normal cognition or MCI: topline results. *The Gerontologist*. 2024 Apr 1;64(4):gnad147. doi: 10.1093/geront/gnad147. PMC10943511.
- 2) Wu, CY., et al., Who Benefited Most from the Internet-Based Conversational Engagement RCT (I-CONNECT)? Application of the Personalized Medicine Approach to a Behavioral Intervention Study. 2024, *J Prev Alzheimers Dis*. <https://doi.org/10.14283/jpad.2024.41>. PMC11061034
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- 4) Liu Chen, Chao-Yi Wu, Hiroko H Dodge, Changes in conversational pattern as a clinical trial outcome: a proof-of-concept study using the I-CONNECT data, *Innovation in Aging*, 2026, igag041, <https://doi.org/10.1093/geroni/igag041>