THE INTERACTION WITH & AMONG THE ELDERLY IN AN ARTIFICIAL INTELLIGENCE ERA

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Abstract: *As the global population ages, addressing the social and emotional needs of the elderly becomes increasingly critical. Loneliness and social isolation are prevalent among older adults, leading to adverse health outcomes. The advent of artificial intelligence (AI) presents new opportunities to mitigate these issues. This paper explores how AI can be utilized to alleviate loneliness among the elderly while emphasizing the irreplaceable value of human companionship over AI interactions.*

Keywords: *Loneliness, Third Age, AI – Artificial Intelligence, Human Interaction, Emotional Depth, Contextual Understanding, Non-verbal Communication, Empathy*

Article Update

I wrote this article back in the beginning of 2023 a few months after AI has been officially announced on November 2022. This was while writing my author's research "**The challenges in dealing with third age loneliness**".

The such named article is still completely relevant but since the AI revolution is effecting every aspect of our lives I thought an update is required. Also since at this point in time I already concluded my practical dissertation research and have interesting results relating to the subject of this article. I decided to add an update at the end of this article called "**Three Years into the AI revolution**".

Introduction

Loneliness among the elderly is a pressing issue with significant health implications, including increased risks of depression, cognitive decline, and even mortality (Holt-Lunstad, Smith, & Layton, 2010). As society seeks solutions, the role of AI in providing companionship and social engagement has garnered attention. The integration of AI into daily life has extended beyond automation and optimization to include roles traditionally occupied by humans. However, it is essential to balance the use of AI with the inherent benefits of human interaction.

The Importance of Human Social Interaction

Human social interaction is integral to combating loneliness among the elderly. Unlike AI counterparts, human companionship provides emotional support, empathy, and genuine connection. Loneliness effects physical and mental health, while meaningful human relationships promote well-being. (Holt-Lunstad 2015).

Furthermore, social interaction fosters a sense of belonging and purpose, crucial elements for combating loneliness. Through shared experiences, conversations, and activities, elderly individuals feel valued and connected to their communities. Social networks enhance the quality of life for older adults, and have profound impact of interpersonal relationships on their overall happiness and satisfaction. (Victor 2003)

1. Mental Well-being

Social interaction plays a pivotal role in maintaining the mental well-being of the elderly. Social connections are associated with a reduced risk of developing mental health issues such as depression and anxiety. Regular social engagement provides stimulation, a sense of purpose, and emotional support, which are crucial for combating loneliness. (Holt-Lunstad, Smith & Layton 2010)

2. Physical Health

The impact of social interaction extends beyond mental health to physical well-being. Loneliness can have adverse effects on cardiovascular health, immune function, and mortality rates among the elderly. Conversely, active social participation has been linked to improved physical health outcomes, including lower blood pressure and decreased risk of chronic diseases. (Hawkley & Cacioppo 2010)

3. Cognitive Function

Social interaction also plays a vital role in maintaining cognitive function in older adults. Social engagement, such as participating in group activities or meaningful conversations, can help preserve cognitive abilities and reduce the risk of cognitive decline and dementia. (Fratiglioni, Paillard-Borg & Winblad 2004)

The Potential of AI in Alleviating Elderly Loneliness

AI technologies offer various applications to support the elderly, ranging from social robots to virtual assistants. These technologies can provide reminders for medications, facilitate communication with family members, and even engage in basic conversations to provide a sense of presence (Tapus, Mataric, & Scassellati, 2007).

1. Social Robots

Social robots like Paro and Jibo have been developed to interact with the elderly, offering companionship and cognitive stimulation. Studies have shown that these robots can reduce feelings of loneliness and improve mood among older adults (Wada & Shibata, 2007).

2. Virtual Assistants

AI-driven virtual assistants such as Amazon's Alexa and Google Assistant can help the elderly manage daily tasks, remind them of appointments, and provide information. These interactions, while functional, also contribute to a sense of connection (Hoy, 2018).

3. Telepresence Robots

These robots enable remote family members to virtually visit and interact with elderly relatives. This technology helps maintain familial bonds, especially when physical visits are not possible (Tsai et al., 2007).

Human vs AI Companionship

Despite the benefits of AI, human companionship remains superior due to the depth of emotional connection and empathy that humans provide. Several studies underscore the irreplaceable nature of human interaction:

1. Lack of Emotional Depth

AI lacks the ability to truly understand and respond to human emotions in the way another human can. While AI can recognize and simulate emotional responses, it cannot genuinely empathize with human experiences. Human relationships offer emotional support that AI cannot replicate. The nuanced understanding and empathy provided by human caregivers and companions are crucial for emotional well-being (Lehmann, 2019).

2. Contextual Understanding

Human conversations are rich in context and history. An AI, regardless of its sophistication, cannot fully grasp the personal history and shared experiences that shape human relationships (Sundar, Jung, Waddell, & Kim, 2017).

3. Non-verbal Communication

Human interactions rely heavily on non-verbal cues such as body language, facial expressions, and tone of voice. These subtle forms of communication are often lost in AI interactions, leading to a less fulfilling social experience (Mehrabian, 1971).

4. Authentic Connections

AI interactions, while helpful, lack the authenticity and spontaneity of human relationships. Authentic connections with family, friends, and caregivers contribute to a richer, more fulfilling social life (Turkle, 2011).

5. Social Integration

Human interactions help the elderly stay integrated within their communities, fostering a sense of belonging and purpose. Social activities and community engagement are vital for mental health and cognitive function (Cacioppo & Cacioppo, 2014).

The Philosophy of Artificial Intelligence

The philosophy of artificial intelligence (AI) examines whether machines can think, understand, or possess forms of mind, and what the development of such systems implies for human self-understanding. It operates at the intersection of philosophy of mind, epistemology, ethics, and metaphysics (Lazarov, 2016).

1. Machine Intelligence and Understanding

A central question concerns "machine intelligence and understanding". Alan Turing reframed the traditional "Can machines think?" into an operational test the imitation game arguing that if a machine's linguistic behavior is indistinguishable from a human's, attributing intelligence is warranted (Alan Turing 1950). In contrast, John Searle contended in his Chinese Room argument that syntactic symbol manipulation does not constitute semantic understanding (John Searle 1980). This debate crystallizes the divide between "functionalism" the view that mental states are defined by their causal roles and biological or intrinsic accounts of mind.

2. Representation and Cognition

A second line of inquiry concerns "representation and cognition". Classical AI assumed cognition is rule-governed symbol processing (Newell & Simon), whereas connectionist and embodied approaches challenge the sufficiency of disembodied computation. Hubert Dreyfus argued that human intelligence relies on tacit, embodied know-how not capturable in formal rules (Hubert Dreyfus 1972). Contemporary philosophy of AI therefore engages with enactivism and situated cognition, questioning whether genuine intelligence requires a body embedded in a world.

3. Ethical and political dimensions

Ethical and political dimensions form a third domain. Nick Bostrom analyzes existential risks from advanced AI and the control problem (Nick Bostrom, 2014), while Luciano Floridi frames AI within an "infosphere" requiring new norms of informational ethics (Luciano Floridi, 2013). Here the focus shifts from whether AI can think to how AI systems transform agency, responsibility, labor, and human dignity. Finally, the philosophy of AI invites reflexive inquiry: AI systems model aspects of cognition, thereby functioning as experimental metaphysics. They compel reconsideration of

consciousness, autonomy, creativity, and the boundaries between natural and artificial kinds. Whether AI ultimately achieves strong autonomy or remains advanced toolmaking, its philosophical significance lies in reshaping the conceptual architecture through which humanity interprets intelligence itself.

The impact of AI on Human Relationships

AI companions are designed to engage in human-like interaction raising questions about their potential to reshape human relationships.

Psychological Impacts

Artificial intelligence (AI) systems particularly conversational agents and socially assistive robots intervene at two analytically distinct levels.

1. Interactional Mediation

AI can reduce barriers to initiating and sustaining contact. Social robots such as Paro have demonstrated short-term reductions in reported loneliness and stress among older adults (Wada et al., 2005). More recently, voice-based conversational systems and embodied agents aim to provide companionship-like interaction. A systematic review by Maja Matarić and colleagues (Bemelmans et al., 2012) suggests that socially assistive robots can positively affect mood and engagement, though methodological rigor varies.

However, critics such as Sherry Turkle argue that substitutive technological companionship risks "alone together" dynamics, where simulated intimacy displaces human reciprocity (*Alone Together*, 2011). Thus, AI's benefit depends on whether it **supplements** or **replaces** authentic social bonds.

2. Existential Self-Esteem

Beyond contact frequency, AI may influence existential self-esteem by reinforcing narratives of competence, continuity, and social contribution. Self-esteem in late adulthood is closely linked to perceived usefulness and recognition (Orth & Robins, 2014). AI systems that enable autonomous communication (e.g., frictionless video calling), memory reconstruction, or intergenerational storytelling can function as **agency amplifiers** rather than mere companions.

From a psychosocial perspective rooted in Erik Erikson's stage of ego integrity versus despair, technologies that help older adults articulate life meaning may enhance ego integrity. Empirical work on digital interventions for loneliness (e.g., Czaja et al., 2018) indicates that technology improves well-being when it increases perceived mastery and social efficacy.

Ambivalence and Design Implications

The impact of AI is structurally ambivalent:

- **Positive trajectory**: AI lowers activation energy for social initiation, strengthens relational continuity, enhances perceived competence, and supports narrative identity.
- **Negative trajectory**: AI simulates relationality without reciprocity, fosters dependency, or reinforces withdrawal from human networks.

For third age populations, the decisive variable is not anthropomorphic sophistication but **autonomy preservation** and **relational bridging capacity**. AI that catalyzes human-to-human interaction and reinforces existential agency can mitigate loneliness and protect self-esteem. AI that substitutes for human presence without restoring social embeddedness may attenuate symptoms while deepening structural isolation.

In sum, AI's influence on third age loneliness is mediated by its alignment with fundamental psychosocial needs: belonging, recognition, agency, and meaning. Its ethical and clinical evaluation should therefore integrate validated loneliness metrics with measures of self-esteem and existential well-being.

The Ambiguities and Dualities in Our Attitude Toward Artificial Intelligence

Public and philosophical attitudes toward Artificial Intelligence (AI) are structured by persistent dualities. AI is seen as both a powerful extension of human rationality and a destabilizing force that challenges autonomy, labor, and even human uniqueness.

1. Simulation versus Understanding

There is the ambiguity between simulation and understanding. Alan Turing proposed evaluating machine intelligence functionally. If a system's responses are indistinguishable from a human's, it qualifies as intelligent (Turing, 1950). In contrast, John Searle argued that syntactic processing does not produce genuine understanding (Searle, 1980). AI thus appears simultaneously intelligent in performance yet questionable in consciousness.

2. Empowerment versus Control

AI embodies a tension between empowerment and control. It enhances decision-making, prediction, and efficiency, but also enables large-scale data extraction and behavioral manipulation. Shoshana Zuboff describes how AI infrastructures can commodify personal experience (Zuboff, 2019). Meanwhile, Nick Bostrom emphasizes both transformative benefits and existential risks

associated with advanced AI (Bostrom, 2014). Optimism and anxiety coexist within the same technological trajectory.

3. Objectivity versus Opacity

There is the duality of objectivity and opacity. Algorithmic systems are often perceived as neutral and data-driven, yet their internal processes can be opaque and bias-amplifying. Cathy O'Neil shows how mathematical models may institutionalize inequality (O'Neil, 2016), while Luciano Floridi argues that AI reshapes the moral structure of the "infosphere," requiring new ethical frameworks (Floridi, 2014).

AI is at once tool and quasi-agent, liberator and risk, objective system and opaque authority. Our ambivalence reflects not confusion but the genuine structural dualities embedded in the technology itself (Lazarov, 2024).

Social Implications

1. Shifts in Social Norms

The presence of AI companions can lead to shifts in social norms and expectations. As individuals become more accustomed to interacting with AI, the nature of human-to-human interactions may change. There could be a reduction in the perceived need for social skills, as AI companions often provide easier and more predictable interactions (Danaher, 2020).

2. Isolation vs. Connection

AI companions can both mitigate and exacerbate social isolation. On one hand, they offer companionship and reduce feelings of loneliness. On the other hand, they might lead to increased physical isolation as individuals spend more time with their AI companions and less with human beings (Bessière et al., 2019).

Ethical Considerations and Future Directions

The integration of AI in elderly care raises ethical questions about the potential for over-reliance on technology and the dehumanization of care. It is crucial to ensure that AI complements rather than replaces human companionship.

1. Ethical AI Use

Developing guidelines for ethical AI use in elderly care is essential. This includes ensuring privacy, consent, and transparency in AI interactions (Sharkey & Sharkey, 2012).

2. Personalized AI Interactions

Future developments in AI could focus on creating personalized interactions that adapt to the individual preferences and needs of elderly users (Tapus et al., 2009). This approach can enhance the relevance and effectiveness of AI-driven socialization.

3. Hybrid Models of Care

Future models of elderly care should incorporate both AI and human elements, leveraging the strengths of each. Hybrid approaches can maximize the benefits of AI while preserving the essential human touch (Broekens, Heerink, & Rosendal, 2009). Combining AI with human care can address both the emotional and practical needs of older adults (Kachouie et al., 2014).

4. Ongoing Research

Continued research is needed to understand the long-term effects of AI companionship on elderly well-being. Studies should focus on optimizing AI design to better support emotional and social needs (Bemelmans et al., 2012).

Conclusion

AI has the potential to significantly alleviate loneliness among the elderly, offering practical support and companionship. However, the superiority of human companionship, with its depth of emotional connection and social integration, must be acknowledged and preserved. By balancing AI technology with human interaction, society can better address the complex needs of the aging population.

Three years into the AI revolution – An Update

My research evaluates the various methods currently used to alleviate loneliness in old age and attempts to substantiate my view that effective solutions should focus on providing independent social freedom to the elderly by overcoming age barriers and technological gaps, thereby allowing them to socialize with other people rather than with artificial intelligence-based substitutes.

The Personal Social Assistant

To test and substantiate my claim, I developed a technological autonomous tool which serves as a personal social assistant designed to provide the social independence that is so important to the elderly. The personal social assistant initiates and manages video socializing interactions between the community member and other community members. The personal social assistant independently turns itself on and off, suggesting and encouraging social opportunities including acquaintances throughout the day. The assistant completely manages the connection and the launch of social video sessions subject to user approval. I started my practical research by testing the Personal Social Assistant within a small community of third age people. The assistant itself periodically checks its intervention effect by surveying users with the official UCLA Loneliness Scale questionnaire.

Some of My Practical Research Insights

A few months ago I concluded my practical research with promising results. I found an average of around 22% reduction in the loneliness levels of the participants according to the UCLA Loneliness Scale.

AI Chats Usage Impressions

While collecting the research data from the participants who used the Social Assistant I also recorded testimonials on their impressions and experience with AI tools like ChatGPT. The participants who experienced AI tools indicated that it is an enjoyable and boredom-relieving activity for them. However, they emphasized that it is in no way a substitute or answer to their social desires and needs and definitely not reducing their loneliness experience.

My research results clearly indicate that society's efforts to alleviate third age loneliness should be invested in focusing on bridging over human socializing barriers of age, health and the tech gap rather than assuming that AI social companions can in any way substitute interactions with humans.
However AI can definitely be used to develop sophisticated socially assisting autonomous layers.

ROI (return on investment)

Another important insight arose from my research result. It is the amazing ROI (return on investment) while using cost effective autonomous social assisting technology that is affordable and accessible to all the population.
Known and even effective loneliness alleviation interventions E.g. volunteers visits, CBT (Cognitive Behavioral Therapy) and other supportive interventions are costly, limited in resources and clearly can not provide an economic and effective intervention accessible to the ever growing number of elderly in our society.

Update Conclusion

Effective, cost effective and population size independent interventions for third age loneliness alleviation, are the usage of personal autonomous mediation tools to the internet. These interventions are built to serve anyone at any age enabling human independent socializing with others without the need to activate any device or depend on third party to do it for us.

Bibliography

Bemelmans, R., Gelderblom, G. J., Jonker, P., & De Witte, L. (2012). Socially assistive robots in elderly care: A systematic review into effects and effectiveness. *Journal of the American Medical Directors Association, 13*(2), 114-120.

Bessière, K., Pressman, S., Kiesler, S., & Kraut, R. (2019). Effects of internet use on health and depression: A longitudinal study. Journal of Medical Internet Research, 11(1), e34.

Bostrom, Nick. (2014). *Superintelligence: Paths, Dangers, Strategies*. Oxford University Press.

Broekens, J., Heerink, M., & Rosendal, H. (2009). Assistive social robots in elderly care: A review. *Gerontechnology, 8*(2), 94-103

Cacioppo, J. T., & Cacioppo, S. (2014). Social relationships and health: The toxic effects of perceived social isolation. *Social and Personality Psychology Compass, 8*(2), 58-72.

Czaja, S. J., et al. (2018). *Improving Social Support for Older Adults Through Technology*. *Gerontologist*, 58(2), e73–e84

Danaher, J. (2020). The impact of AI on jobs and work: The automation of labour and the future of employment. AI & Society, 35(2), 347-356.

Dreyfus, Hubert. (1972). *What Computers Can't Do*. New York: Harper & Row.

Erikson, Erik (1950). *Childhood and Society*. W. W. Norton

Floridi, Luciano (2013). *The Ethics of Information*. Oxford University Press.

Floridi, L. (2014). *The Fourth Revolution: How the Infosphere is Reshaping Human Reality*. Oxford University Press.

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLOS Medicine, 7*(7), e1000316.

Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). *Loneliness and Social Isolation as Risk Factors for Mortality*. *Perspectives on Psychological Science*, 10(2), 227–237.

Hoy, M. B. (2018). Alexa, Siri, Cortana, and more: An introduction to voice assistants. *Medical Reference Services Quarterly, 37*(1), 81-88.

Kachouie, R., Sedighadeli, S., Khosla, R., & Chu, M. T. (2014). Socially assistive robots in elderly care: A mixed-method systematic literature review. "International Journal of Human-Computer Interaction, 30"(5), 369-393.

Lazarov, I. (2016). Systematic and Social Philosophy. A Compact Textbook. Varna: Free University Publishing House. Chapters 8, 9, 59-73. ISBN 978–954–715–613–5

Lazarov, I. (2024). Phenomenon and Psyche. The Theoretical Bases of Critical Psychologizing. Varna: Free University Publishing House, Chapter 7, 675-677 (440-443). ISBN 978-954-715-777-4.

Lee, M., Burch, A., & Hulse, C. (2019). Exploring the benefits of AI companionship for mental health and wellbeing. Journal of Artificial Intelligence Research, 64, 149-165.

Lehmann, L. (2019). The importance of human touch in caregiving. *Journal of Gerontological Nursing, 45*(2), 11-15.

Mehrabian, A. (1971). *Silent Messages: Implicit Communication of Emotions and Attitudes*. Belmont, CA: Wadsworth.

O'Neil, C. (2016). *Weapons of Math Destruction*. Crown.

Orth, U., & Robins, R. W. (2014). *The Development of Self-Esteem*. *Current Directions in Psychological Science*, 23(5), 381–387.

Russell, D., Peplau, L. A., & Ferguson, M. L. (1978). *Developing a Measure of Loneliness*. *Journal of Personality Assessment*, 42, 290–294.

Searle, John. (1980). *Minds, Brains, and Programs*. *Behavioral and Brain Sciences*, 3(3), 417–457.

Sharkey, A., & Sharkey, N. (2012). Granny and the robots: Ethical issues in robot care for the elderly. *Ethics and Information Technology, 14*(1), 27-40.

Sundar, S. S., Jung, E. H., Waddell, T. F., & Kim, K. J. (2017). "Cheery Companions or Serious Simulations? Role and Impact of Anthropomorphism and Gender in User Interactions with Robots." *Computers in Human Behavior, 66*, 87-95.

Tapus, A., Mataric, M. J., & Scassellati, B. (2007). The grand challenges in socially assistive robotics. *IEEE Robotics and Automation Magazine, 14*(1), 35-42.

Tsai, T. C., Hsu, Y. L., Ma, A. I., King, T. L., & Wu, C. H. (2007). Developing a Telepresence robot for interpersonal communication with the elderly in a home environment. *Telemedicine and e-Health, 13*(4), 407-424.

Turing, Alan (1950). *Computing Machinery and Intelligence*. *Mind*, 59(236), 433–460

Turkle, S. (2011). *Alone Together: Why We Expect More from Technology and Less from Each Other*. Basic Books.

Wada, K., Shibata, T., Saito, T., & Tanie, K. (2005). *Effects of Robot-Assisted Activity for Elderly People*. *Proceedings of the IEEE*, 92(11), 1780–1788.

Wada, K., & Shibata, T. (2007). Living with seal robots: Its sociopsychological and physiological influences on the elderly at a care house. *IEEE Transactions on Robotics, 23*(5), 972-980.

Zuboff, S. (2019). *The Age of Surveillance Capitalism*. PublicAffairs.