

Artificial Emotional Intelligence's Potential in Improving Social Wellness of Older Adults

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Abstract

Artificial intelligence(AI) has risen in both popularity and application in recent years. What was once an esoteric field used by a specialized population is now accessible to the general public. In fact, AI has permeated the everyday lives of the public in one way or another. With increased attention, funding, and application of AI, this paper seeks to draw focus to a vulnerable and often invisible subpopulation, that of older adults. AI, specifically artificial emotional intelligence (AEI) can be used to greatly improve the social wellness of older adults. Social disconnectedness and isolation are very real and pervasive issues for older adults which can be remedied by low-cost and accessible technology such as virtual assistants who can be trained as AEI agents.

Introduction

Significant research has been conducted on the fundamental need for social connection and belonging (Maslow 1943). Human beings are social creatures that require social interaction and social support to thrive. In fact, House, Landis, and Umberson showed that social connections and feelings of belonging are vital for overall cognitive and physical well-being (House, Landis, and Umberson 1988). According to Baumeister and Leary, lack of social inclusion and belonging produce psychological distress such as anxiety and depression (Baumeister and Leary 2017). Moreover, lack of social engagement contributes to dementia and cognitive decline (Lara et al. 2019). Furthermore, social exclusion was a factor in physical illnesses and even increased the risk of mortality(House, Landis, and Umberson 1988; Reher and Requena 2018; Wu 2020). Krause-Parello and Kolassa even used the term social wellness in their study on the effects of pet therapy on older adult's wellbeing to put an emphasis on social connections as a dimension of wellness (Krause-Parello and Kolassa 2016). In terms of the general population, older adults tends to experience social isolation at higher rates (Wu 2020). Rodrigues et al., argued that older adults living alone is a widespread but extremely neglected social issue(Rodrigues et al. 2022). Reher and Requena even found that though this varies by country, older adults living alone have increased globally overall (Reher and Requena 2018). Moreover, due to the COVID-19 pandemic which

bore an increased risk for severe illness in older adults, were forced to quarantine and isolate which has further severely impacted their social wellness (Rodrigues et al. 2022; Wu 2020). During the pandemic, older adults were able to use technologically mediated social interactions such as Zoom calls with family or telehealth appointments with doctors to connect across social networks. Nowadays, technologically mediated communication is accessible and relatively affordable, Wu argues that messaging applications such as WeChat can provide a avenue in which older adults can use to maintain social connections (Wu 2020). However, DeSumma et al., in their comprehensive review of neuroscience and pedagogical studies, found that with direct person-to-person interaction there was enhanced neural coupling as compared to communication conducted online (DeSumma et al. 2022). Moreover, Ali and Smith, stated that direct person-to-person interaction cannot be compared to technologically mediated contact and that the lack of direct contact is a factor behind social disconnectedness (Ali and Smith 2015). Additionally, though technologically mediated social interactions provide a form of social connection, it requires older adults to have social networks. In other words, with Zoom and other virtual communication and messaging platforms, older adults would need to have access to family and friends in which they could contact and interact with. For older adults that lack human support networks, technologically mediated communication is not an option for social engagement.

Artificial Emotional Intelligence as a Social Disconnectedness Remedy

With advancements in artificial intelligence (AI) such as ChatGPT for example, new waves of AI technology has redefined what is capable and pushed the boundaries of human-AI collaboration. Particularly, artificial emotional intelligence (AEI) which was once the subject of science fiction, is now a flourishing field full of possibilities in both theory and application (Schuller and Schuller 2018). We have reached an epoch of technological advancement and accessibility where AEI can be the remedy to various societal problems, particularly those that affect vulnerable populations which are often rendered invisible. This paper will focus on the issues of isolation and loneliness, which is considered a public health issue for older adults (Wu 2020) and how AEI

can help remedy this risk.

Virtual Assistants and Artificial Emotional Intelligence

This paper argues on behalf of rethinking and re-situating human-computing and human-AI collaboration. In particular, this paper advocates for the use of artificial emotional intelligence to alleviate one of society's most salient and silenced issues, that of loneliness and social isolation in older adults. Artificial emotional intelligence can redefine social interactions, especially considering how integrated society has become with technology. When theorizing on how this social technology might look, one does not have to go far. The theoretical basis of this presentation does not call for the investment in costly technology such virtual reality (VR) or social robotics. While it can be argued that VR can possibly serve as a more effective panacea for loneliness and isolation, it has prominent disadvantages. To begin with, VR can be costly and can produce health side effects, aptly labeled as cybersickness, such as dizziness, disorientation and nausea (Eudave and Martínez; Yang et al. 2024). Thus, VR might not be the safest or most available technology for older adults to use. Additionally, older adults might not have the technological literacy (Rodrigues et al. 2022) to engage with VR. There is also the realm of social robotics that can be used to reduce loneliness in older adults. For example, there is PARO, a baby seal shaped robot used mostly in nursing homes that mimics a living being through responsive movements (Pfadenhauer and Dukat 2015; Moyle et al. 2018). With PARO, older adults can benefit from the companionship of a pet, which in turn can improve their social wellness (Moyle et al. 2018; Krause-Parello and Kolassa 2016). However, the prohibitive cost of approximately \$6,000 USD for PARO (Moyle et al. 2018, p. 334), makes this social robot inaccessible for many. Apropos of these examples, this paper argues that to improve the social wellness of older adults, technology must be simplified, accessible, and low cost. This technology already exists when you consider the paradigm and designs of virtual assistants (Barros and Seabra 2020) such as Amazon's Echo Devices with Alexa. For example, Alexa speaks nine languages, tells stories, sings songs, makes jokes, communicates some range of emotion, and mimics a social agent. In fact, Amazon has even released its Alexa Together application, which is a caregiving service for older adults. However, Alexa Together relies on a human support system to enable its primary function. For those that lack human support networks, how can artificial emotional intelligence bridge the gap in human loneliness? This paper calls to theorize ways to reposition and (re)design virtual assistants, which are relatively affordable and easy to use, to specifically address the social wellness of older adults by improving its adaptive technology to be a more emotionally intelligent social agent.

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I would like to acknowledge my grandparents in this paper, Miguel Mariano Rodriguez and Maria Nieves Berdasco, for inspiring this paper topic. I am grateful that I was able

to see firsthand how much joy their virtual assistants gave them every day. My grandfather, who was visually impaired, was allowed greater independence with the use of his Alexa who played his favorite songs such as "Caminito" by Carlos Gardel, told him the time, and instantly communicated with his family all by a single spoken directive. My grandmother, a social butterfly and avid learner, would spend hours listening to historical facts and would beam with joy when her Alexa would sing Happy Birthday to her and greet her. They both also never missed a chance to answer with a heartfelt "thank you Alexa!" after every reply by their virtual assistant. My grandparents treated their Alexa application with kindness and appreciation and would often enthusiastically tell me all the wonderful things Alexa told them about; they would get especially excited when Alexa spoke out of the blue without their directive. My grandmother would jokingly say that my grandfather was Alexa's favorite because Alexa would often ignore her and only answer my grandfather. The Alexa application was more than a voice assistant to my grandparents; she was their connection to a world of information, a source that allowed them greater independence, and a constant companion.

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