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ACCOMMODATING COMMUNICATION WITH CONVERSATIONAL AGENTS: EXAMINING THE PERCEPTIONS AND BEHAVIORS OF OLDER ADULTS WHEN USING VOICE ASSISTANT TECHNOLOGY

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The purpose of this study is to examine the communicative relationship between older adults and conversational agents (CA), such as a Google Home Mini, to understand if and how interaction with AI-based voice technology affects perceptions, technological adoption, and, ultimately, *human-machine* communicative behaviors. Using the Communication Accommodation Theory (CAT) framework (Gallois & Giles, 2015), and the categorical schema as outlined in the Unified Theory of Adoption and Utilization of

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Technology (UTAUT) model (Venkatesh et al., 2003) of technology acceptance, we qualitatively assess the relationship between expectations for use and ongoing / post-interaction user attitudes. CAT focuses on the adjustments we make in our perceptions of and engagement in communicative behaviors. In other words, we enter into communicative situations with intentions and motivations derived from antecedent socio-historical context in mind. This squares with what the UTAUT model details as influencers of technological adoption and use: *performance expectancy*, *effort expectancy*, *social influence*, and *facilitating conditions* (Venkatesh et al., 2003). We use these constructs as a coding guideline to index data scraped from the Mini, and collected from surveys, interview transcripts, user journals, and field notes throughout a 10-week study.

Historically, CAT is applied to *human-human* communication exchanges. As the theory posits that interpersonal relationships can and will influence motivations or intentions for dyadic communication, this makes sense. However, we argue that as AI-based voice technologies become more sophisticated as voice assistants enter our intimate spaces, the application of CAT to the *human-machine* communicative relationship is warranted. To date, research on user attitudes and behaviors when interacting with voice-based technology shows mixed results. A recent study of digital voice assistants and children found that users tend to not impose the same relational expectations on voice assistants, and are less empathic to the devices in a communicative situation (Aeschilmann et. al, 2020). However, another study found that user perceptions of voice assistants were both reinforced and undercut by their interactions with the device (Festerling & Siraj, 2020). Similarly, as Guzman (2019) notes, user perceptions of voice-based technology diverge depending upon whether a user conceptualizes they are speaking to the assistant (software) or the technological device (hardware). Therefore, further inquiry relating to the interpersonal communicative relationship fostered between *human* and *machine* when interacting with CAs is warranted. To this end, we proposed the following research questions:

> R1: Does interaction between human user and conversational agent alter user perceptions of the device?
>
> R2: Does interaction between human user and conversational agent alter user expectations for communication exchange?
>
> R3: Does interaction between human user and conversational agent affect the likelihood of new tech adoption for older adults?

For this study, we recruited participants 65 and older from a large Midwestern suburb. Participants were given a Google Home Mini, and asked to interact with device two-fold: 1) for *natural use* (i.e. using the device as they please to check weather, listen to music, etc.), and 2) for at-home exercise using a novel application-based exercise program. Existing research on the physical activity of older adults suggests they are more likely to continue physical activity (PA) programs in home-based settings (Ashworth, et al., 2005; Chin et al., 2020). Additionally, internet-based PA programs are effective in introducing behavioral change (Wantland, et al., 2004) when used by older adults. Therefore, using

a PA program as an entry-point, we will assess how older individuals may alter their attitudes and behaviors towards and because of CAs.

This population represents a unique sample since there is a dearth of research on the adoption of voice-based technology by older individuals. Unlike computers or mobile technology, users interact with voice-based technology through natural conversation (Hoy, 2018), which is particularly preferred by older adults (relative to keyboard entry) given its ease of use and reduced psychomotor loads (Quinn, Smith-Ray, & Boulter, 2016; Wulf et al., 2014). As technology use by older adults is associated with higher levels of autonomy and independence (Rogers & Mitzner, 2017), specifically examining attitudes and behaviors relating to CAs and voice-based technology adoption is logical.

To date, we have completed the study with 15 participants, and are enrolling an additional 15 participants for another 10-week session. Preliminary data analysis shows that user attitudes and behaviors both harden and evolve after interacting with CAs, supporting previous research (Guzman, 2019; Festerling & Siraj 2020). Complete results are anticipated by late summer 2021.

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