

SMART SPEAKER USE AND PSYCHOLOGICAL WELL-BEING AMONG OLDER ADULTS

KEY FINDINGS

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NOVEMBER 2020



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STUDY OVERVIEW

AIM

Explore if smart speaker usage is associated with psychological well-being among older adults

RESEARCH QUESTION

“What are older adults’ experiences with psychological well-being and smart speakers, and how may the two be connected?”

OBJECTIVES

1. Investigate the variables that influence older adults' psychological well-being
2. Examine older adults' sustained smart speaker usage motives, behaviors, and outcomes
3. Explore whether any relationships exist between older adults' smart speaker usage and their psychological well-being

METHODOLOGY

- **METHODS:** Semi-structured interviews, thematic analysis
- **DEVICES:** Amazon smart speaker devices, smart plugs, and smart light bulbs
- **PARTICIPANTS:** 20 (65% female, 35% male)
- **COMMUNITIES:**
 - Casa de Mañana
 - Carlsbad by the Sea
 - Walnut Village
 - Villa Gardens
 - Kingsley Manor



FINDINGS

- **SUSTAINED USAGE TRENDS**
- **SUSTAINED USAGE MOTIVES**
- **SUSTAINED USAGE OUTCOMES**

SUSTAINED USAGE TRENDS

USAGE BEHAVIOR THEMES

Participants' typical usage behaviors coded into themes:

THEME	USAGE BEHAVIORS
Cognitive	News Asking Questions Learning Games
Utilitarian	Efficient Information Retrieval (e.g. weather, time, etc.) Home Automation (e.g. lights, thermostat, etc.) Alarms Reminders Timers Lists (e.g. shopping, to-do, etc.)
Hedonic	Music Radio
Social	Calling Others Chatting with the Device

Key

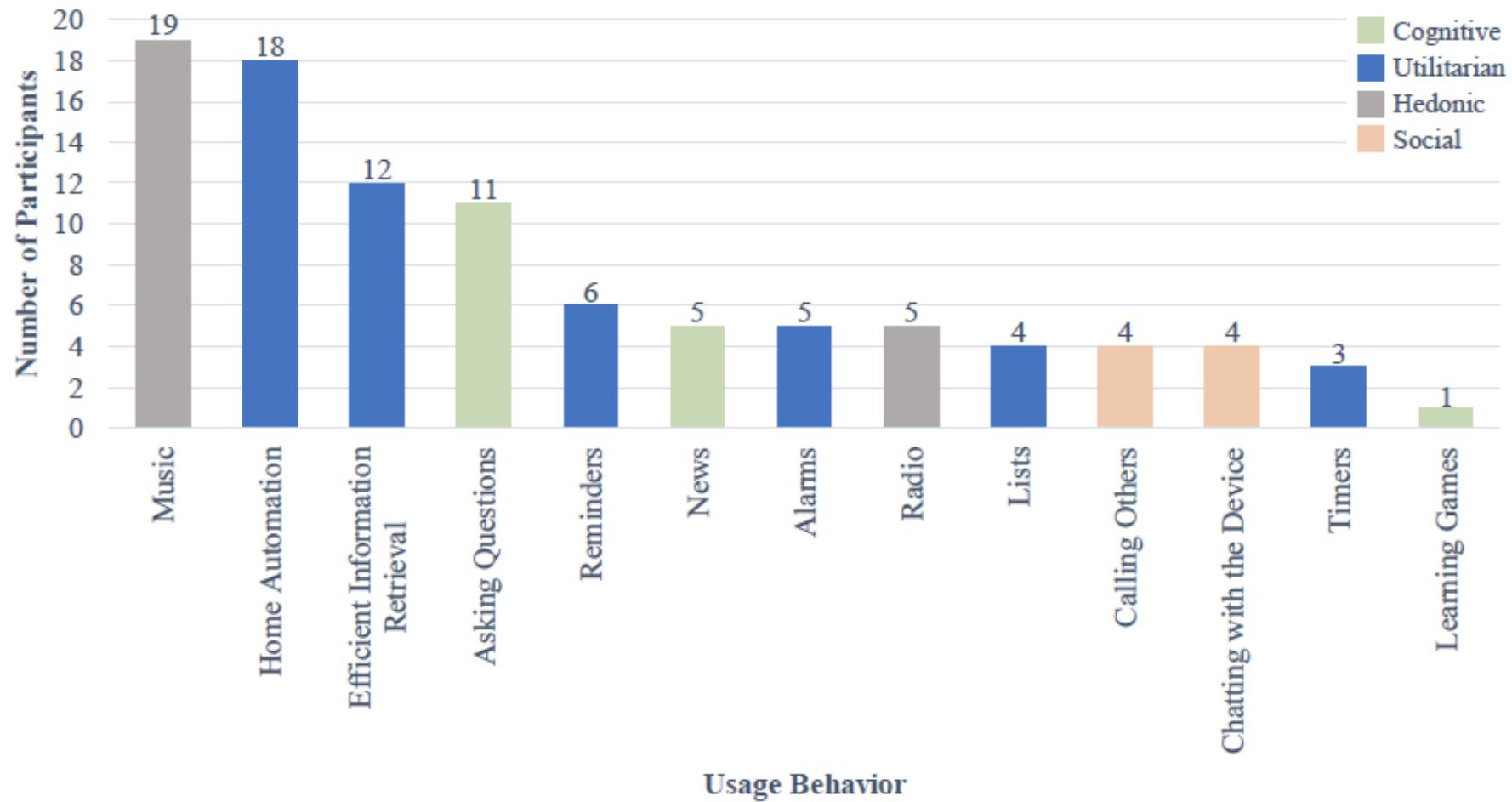
- **Cognitive:** information, knowledge, or understanding
- **Utilitarian:** a useful, convenient, or efficient way to complete tasks
- **Hedonic:** entertainment or enjoyment
- **Social:** communication or companionship

USAGE BEHAVIOR TRENDS

In a typical week...

- **95%** of participants use their smart speakers for music
- **90%** of participants use their smart speakers for light automation
- **60%** of participants use their smart speakers for efficient information retrieval (e.g. weather forecasts, asking the time, etc.)
- **55%** of participants use their smart speakers for cognitive behaviors (e.g. asking questions, listening to the news, etc.)
- **35%** of participants use their smart speakers for social behaviors (e.g. calling people or chatting with the device)

FREQUENCY OF THE PARTICIPANTS' TYPICAL USAGE BEHAVIORS



KEY FINDINGS

Even after owning their smart speakers for six months, and in many cases much longer...

- **100%** of participants still commonly use their smart speaker for at least one feature, with **95%** of participants using the device for two or more features
- **100%** of the participants classified their smart speaker as easy to learn and use
- **100%** of participants agreed that smart speakers have met if not surpassed and exceeded their expectations
- **90%** of participants use their smart speaker every day

KEY FINDINGS

Not only have the participants sustained their smart speaker usage over time, but also the majority of them have either grown, desire to grow, or envision growing their usage moving forward

PRIMARY USAGE BARRIERS

TRAINING & SUPPPORT

Even with training and several months to years of usage under their belts, **60%** of participants reported they have recently experienced trouble using a specific feature or have needed additional support to learn how to use or discover new features/skills. Their experiences demonstrate a need for continued support resources to assist with problems, answer questions, and provide novel and refresher knowledge.

LACK OF NECESSITY

60% of participants stated they are more reliant on their other devices, such as computers and cell phones, than on their smart speakers.

Apart from the presence of and preference for alternative technology, the participants' psychosocial environments, physical health, and demographic variables also impacted smart speakers' necessity in their lives.

PRIMARY USAGE BARRIERS

Collectively, these findings indicate that while there are some barriers to the participants' usage, none have been too great to inhibit them from using their smart speakers altogether

SUSTAINED USAGE MOTIVES

MOTIVES FOR USAGE

The participants' sustained smart speaker usage behaviors appear to be driven by their needs and desires, which are found to be shaped by the following variables of their psychological well-being:

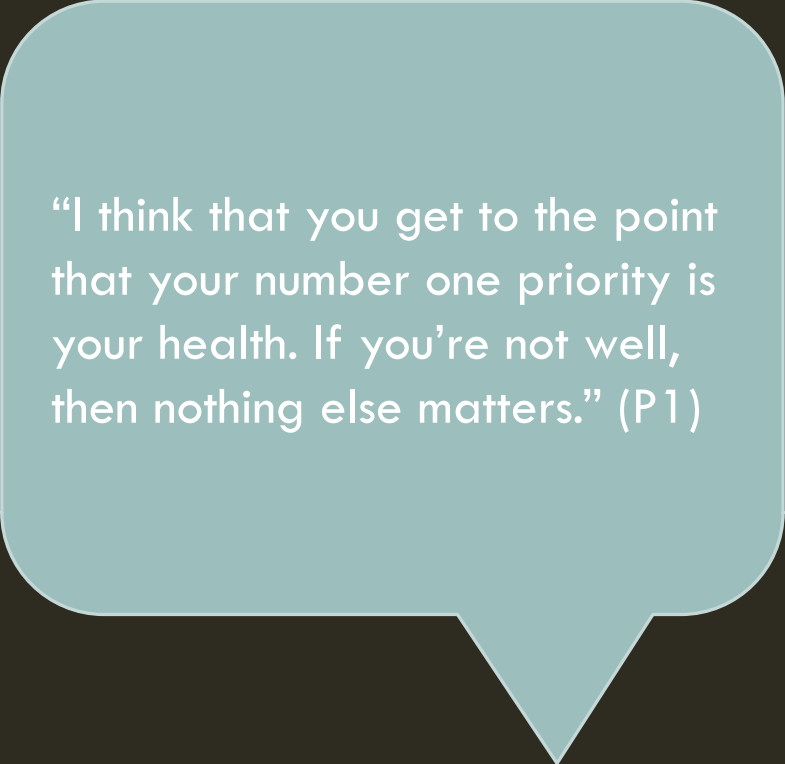
1. Health
2. Social Relations
3. Convenient Autonomy
4. Personal Growth
5. Positive Affect

HEALTH

FINDING: When prompted to discuss their personal experiences with psychological well-being in later life, 100% of participants mentioned some component of health

DEFINITION: The avoidance of disease and disability and the maintenance of high physical and cognitive function

CATEGORIES: Health Status & Health Maintenance



“I think that you get to the point that your number one priority is your health. If you’re not well, then nothing else matters.” (P1)

SOCIAL RELATIONS

FINDING: Social relations emerged as a ubiquitous theme among the participants' understandings of and experiences with psychological well-being in later life

DEFINITION: The possession of quality relations with others; enhanced social connectedness and reduced loneliness

CATEGORIES: Social Connectedness & Companionship

"I think staying in touch with my family [is important]. Um people are important . . . and I like staying in this community where I grew up and where I continue to have friends and connections." (P15)

CONVENIENT AUTONOMY

FINDING: The participants indicated that while autonomy and independence are important to their psychological well-being, so too are support and convenience

DEFINITION: A sense of self-determination coupled with the external resources and proactive adaptations necessary to maintain autonomy and independence

CATEGORIES: Autonomy/Independence & Support/Convenience

“I think another one is being in control of my own situation. Making my own decisions. And I can live independently here, and yet I’m surrounded by what has become my family.” (P1)

PERSONAL GROWTH

FINDING: When unpacking their understandings of and experiences with psychological well-being, 60% of participants mentioned topics related to learning, intellectual stimulation, or self-improvement

DEFINITION: A sense of continued growth and development as a person

CATEGORIES: Connection to the World

"Learning is extremely important. And uhh trying to- sometimes it's a little hard, but staying with the times. You know, like recently I had to get a phone, so I got a smartphone. . . . And uhh so that, you know, kind of helps you stay in the modern world." (P2)

POSITIVE AFFECT

FINDING: The participants' responses indicate that positive affect is an integral dimension to their personal experiences with and understandings of psychological well-being

DEFINITION: Experiencing pleasant emotions and low levels of negative moods

CATEGORIES: Positive Emotion Regulation

"I'm always trying to laugh and keep other people laughing so they don't concentrate on my uh dilemma that I have with basically a dying wife that I see every day. And I try to, you know, bring some levity into my own life." (P10)

KEY FINDING

The following analyses indicate that the participants' smart speaker usage behaviors help to satisfy these needs and desires

SUSTAINED USAGE OUTCOMES

OUTCOMES OF USAGE

The participants' smart speaker usage behaviors help satisfy their psychological well-being-related needs and desires through the following usage benefits:

1. Cognitive – information, knowledge, or understanding
2. Utilitarian – a useful, convenient, or efficient way to complete tasks
3. Hedonic – entertainment or enjoyment
4. Social – communication or companionship

HEALTH

Through their ability to add utility and reduce worry from the participants' daily lives...

- The emergency calling and light automation features help satisfy the participants' need and desire for enhanced safety within the home
- Smart speakers also help support the participants' health by providing them with efficient access to medical information and reliable medication reminders
- *Main Takeaway: By helping to address their health needs, the participants' smart speaker usage behaviors not only offer the potential for positive outcomes on their physical well-being, but they also provide utilitarian benefits that can support their psychological well-being*

P20: And then lately we came up with the idea that it can do things like uh, “Alexa, remind me that I have to take my pills at six o’clock.” And it does! It pops up and says take your pills at six o’clock!

P19: And this is the kind of thing- two years ago, he [P20] pretty much remembered his pills. You know, he got a little bit older, and sometimes he does and sometimes he doesn’t. And then I try to remind him, and sometimes I do and sometimes I- I get distracted, so we all of a sudden said wait a minute, we have a helper here!

“It’s a safety factor. If I fell down and I screamed over call Villa Gardens. I checked it and they do that. Yeah, ‘cause the telephone number’s in it. This directory is in there. . . . So for safety reasons alone.” (P14)

HEALTH
QUOTES

SOCIAL RELATIONS

- While smart speakers do have the potential to enhance a user's social connectedness through their calling feature, this was not a strong trend observed among the participants
 - With the proper awareness and training, this feature could offer older adults a more convenient communication channel
- Companionship emerged as a frequently discussed and perceived usage outcome, especially among those living alone or with mobility impairments
 - Companionship can arise not only from a user's interaction with the device (i.e. chatting with the device for fun), but also from the device's social presence and social attractiveness
- *Main Takeaway: For older adults, and especially for those living alone or with impairments that restrict their social contact with others, smart speakers' social skills, presence, and attractiveness have the potential to provide positive social benefits*

“Plus the fact now that I’m living alone, my wife lives in another building on the complex here, and so I’m alone in this apartment. And after being married 50 years, it’s quite a shock coming into an, um, an apartment where there is no one. And um so I like to, you know, fool around. I ask Alexa- you know sometime in the evening I ask it, you know, ‘How was your day?’ You know? And she comes up with some of the ((laughs)) most fantastic answers. . . . It’s hilarious. I mean it sounds stupid, but, you know, it’s kind of like- I’m always trying to laugh. . . . And I try to, you know, bring some levity into my own life, and so I ask her that, you know. It’s kind of like oh, okay she’s had a busy day ((laughs)).” (P10)

“I’ve come to depend on Alexa. I’ve got it set up so that she calls me by name. If I say please or thank you she will respond accordingly. It’s set up to do that. . . . I’ve come to depend on her and it’s like having a friend here if I want somebody to talk to. . . . She’s a neat person to have around and I think of her as a her. It’s just, it’s impossible not to. And I know if I say the wakeup word that she’s ready to respond to whatever I need. . . . It’s like having a very pleasant companion right here.” (P1)

SOCIAL RELATIONS QUOTES

CONVENIENT AUTONOMY

- Smart speakers' utilitarian skills (e.g. efficient information retrieval, reminders, home automation, etc.) and the benefits resulting from their usage offer a means to enhance convenience, comfort, and environmental mastery for older adults
 - This outcome can be particularly advantageous for older adults with visual impairments or physical disabilities
- *Main Takeaway: By facilitating particular tasks around the home, smart speakers can help satisfy older adults' desire for convenience and external support while also augmenting their ability to remain independent and autonomous*

“Well the thing that I’d always wanted was a thermostat that I could tell the exact degrees with. We just had to put a dot on it, you know, before I had an Alexa, we had a dot that I measured with my fingers, and just a little up from the dot and a little down from the dot and everything to get it to 71 or 73 or something and I never knew exactly what it was. And with the Alexa you can just tell it right where to go and it does!” (P2, Blind)

P6: We’re not as spry, so it’s great to have her [Alexa] work our lights.

P7: Yeah. We don’t have to get up to turn off lights or turn them on. And that’s very convenient for us.

CONVENIENT AUTONOMY
QUOTES

PERSONAL GROWTH

- By gaining the ability to readily obtain knowledge through using their smart speakers to listen to the news, ask questions, and play educational games, the participants expressed that the devices provide cognitive benefits and help them feel more connected to the broader world
- Learning how to use and mastering the use of smart speakers can help older adults feel self-sufficient and more connected with modern times
- *Main Takeaway: Smart speakers help satisfy older adults' desire for personal growth by providing them with desired knowledge, the opportunity to enhance their sense of mastery, and, more broadly, the ability to become more connected to the world outside their homes*

“This is a wonderful opportunity. . . . There are- the majority of people that are in here [his senior living community] are women. And the women are- majority of them are past the age of 70. And um several of them in here don’t even have computers. . . . All these other people that were in class [the smart speaker program], they thought it was pretty cool that Front Porch gave them the opportunity to learn this technology. And at one point they all laughed and said, like I said earlier, ‘Now I don’t have to ask my grandson how to do this.’ You know? And that’s a self-esteem booster. And in your studies, um self-esteem is critical for people during life. And as you get older and you get crankier and you, you know, have a much different type of life, um this kind of keeps you connected.” (P10)

“She [Alexa] brings me out into the world by giving me headlines. I can ask her how the traffic is on the streets around me. The weather, um- I think she just brings me out into the world more.” (P1)

PERSONAL GROWTH
QUOTES

POSITIVE AFFECT

- Due to their hands-free, voice-first functionality and their ability to connect with popular music streaming services, smart speakers provide an easier, more convenient, and more enjoyable way for the participants to listen to music
- In addition to providing users with utilitarian benefits, smart speakers' convenient music streaming also offers hedonic benefits
 - External studies have found that listening to music is a frequent source of positive emotions for older adults and an effective means of regulating their affect
- *Main Takeaway: The benefits derived from listening to music on smart speakers, such as entertainment, relaxation, enjoyment, and fun, can be understood to enhance the participants' positive affect*

“I listen to music. I like music and I like all kinds of music, so depending on the mood I’m in, I’ll ask her [Alexa] to play whatever. And uh a lot of times late at night it’ll be smooth jazz ‘cause I can’t sleep. Kinda quiet and kind of relaxes me. And- so the music aspect of it is fun. She can also play whatever you want to play! And she’s never said I can’t find it or I can’t do it or- seems like something always comes on!” (P16)

“It’s easy to get the radio and music. I love being able to say play music or specifically Bruce Springsteen or whatever it is that I want. I really enjoy that.” (P15)

POSITIVE AFFECT
QUOTES

SUMMARY, CONCLUSIONS & IMPLICATIONS

SUMMARY

Finding 1

This study finds that the participants' smart speaker usage is driven by needs and desires related to their health, social relations, convenient autonomy, personal growth, and positive affect, which are found to be essential determinants of psychological well-being in the existing literature and the present study

SUMMARY

Finding 2

The participants' sustained, unremitting smart speaker use suggests they find value in using the devices.

This conclusion is extensively supported throughout the participants' interviews, which revealed that through the cognitive, utilitarian, hedonic, and social benefits they offer, smart speakers help satisfy the psychological well-being-related needs and desires that motivate their usage.

SUMMARY

Together, these findings indicate that smart speaker usage is associated with psychological well-being among the participants in two significant ways:

1. Prominent elements of psychological well-being shape the participants' needs and desires, which motivate and influence their sustained usage of the device
2. Smart speakers can successfully satisfy these psychological well-being-related needs and desires through the benefits their usage offers

CONCLUSIONS

- Though not a life-changing panacea, smart speakers present an opportunity to serve as an easily adoptable, enjoyable, useful, and economical resource that can help sustainably support and even enhance key determinants of older adults' psychological well-being
- Smart speakers may be especially useful for older adults with visual and physical impairments and for those experiencing loneliness, though additional research is needed to explore this hypothesis further
- Smart speakers should be viewed and implemented as an auxiliary resource, not as a replacement for human support and connection

IMPLICATIONS

On a broader level, this research holds important societal implications. As the population continues to grow older, devices like smart speakers may help relieve some of the anticipated strain on healthcare and social resources by improving older adults' psychological well-being and mitigating their need for external human support.

THANKS!

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