A DESCRIPTIVE ANALYSIS OF HOMEBOUND ADULTS: BEHAVIORAL ADHERENCE, TECHNOLOGY USE, AND FAITH CONNECTION AMID COVID-19.

BY

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Abstract: The purpose of the study was to explore homebound older adults' behavior towards technology adoption for connections and faith promotion amid COVID-19. Data of this study was gotten from N= 200, residents within Oklahoma State, USA. Participants were grouped in two, ages 18-49 (n = 96) and ages 50 and above (n = 104). All participants participated in a Qualtrics Survey. Mean age was 49.61; SD = 19.663. Participants reported their likelihood of technology adoption, current technology product use, technology-based faith activities done while homebound, and anticipated health faith behavior in the next year. IBM/SPSS was used to analyze data. On the likelihood of technology adoption, older adults showed a lesser likelihood to give others advice on new technology X^2 (1, N = 188) = 17.842, $p < 0.001$ nor be able to figure out new high-tech products without help X^2 (1, N = 189) = 16.783, $p < 0.001$ compared to younger adults. Results of the current technology product use indicated a significant age-based response differences relative to use of social media X^2 (2, N = 177) = 7.113, $p < 0.05$ and the use of smart/apple watch, X^2 (1, N = 198) = 6.168, $p < 0.05$ (Table 3). older adults are less likely to respond to the use of social media or devices such as smart/apple watch when compared to younger adults. One significance difference emerged pertaining to the using the internet to download church news bulletins X^2 (1, N = 51) = 11.599, $p < 0.001$. Therefore, older adults responded that they used the internet to download and view their local church news bulletins compared to those under age 50. Considering the COVID-19 and anticipated technology use over the next 12 months, no significance difference emerged relative to age-based responses. However, a significance difference emerged on the adherence to COVID-19 CDC oriented guidelines. older adults showed greater willingness to use protective masks while attending religious services X^2 (4, N =190) = 24.45, $p < 0.001$ and also a greater expectation to social distance when attending church activities X^2 (4, N = 189) = 10.618, $p < 0.05$. Findings from this study have implications relative to informing pastoral ministers, family caregivers and others who interact with older adults on the most applicable technology tools to enhance older adults' ministry and caregiving. This study could be vital to reduce loneliness and improve the quality of life of older adults in situations of social isolation.

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CHAPTER I

INTRODUCTION

According to the Social Security Administration (2010), the state of being homebound refers to individuals who are unable to leave home due to illness or disability. Nearly two million people of these persons in the United States are aged 65 and older (Ornstein et al., 2020). Many homebound adults often encounter feelings of social isolation. Prolonged social isolation has been reported to contribute to loneliness. This ultimately leads to premature and severe age-associated mental health pathologies, including anxiety and depression, and eventual death (Perissinotto, Cenzer & Covinsky, 2012). In fact, over half of all community-dwelling older adults remain homebound for an extended period of time before death (Ornstein et al., 2020) The recent Coronavirus-19 (COVID-19) pandemic has confined millions of everyday citizens to their homes due to enforcement of various mandatory quarantine and lockdown policies to control spread of the virus to more vulnerable populations, including older adults (Banerjee & Rai, 2020). Rules and regulations were also put in place to limit social gatherings of more than 50 persons, including weekly church-based religious services (CDC, 2020).

Church participation is a vital social activity for a majority of older adults (Wilmoth, et al., 2014). It has been found that, in the United States, 26% of older adults (65>) say religion is important to them and so they belong to a particular church

denomination and attend church regularly (Pew Research Center, June 13, 2018). In fact, an estimated 53% of older adults attend weekly religious services compared to 33% of millennials (Pew Research Center, 2010). Therefore, church leadership must effectively provide ministries to an ever-growing number of active older adults. Technology represents a promising medium by which to sustain participation among those older adults unable to actively attend and participate in worship yet wish to remain connected. Many churches have responded to integrated live-stream technology to improve inclusion and accessibility to religious services for older members who have had to remain homebound during the pandemic (Bryson, Andres & Davies, 2020). However, little is known on how the interplay of technology, human behavior, and practice of one's faith will persist during and after the COVID-19 pandemic.

Using Attachment theory (Granqvist, Mikulincer, & Shaver, 2010) as a guiding theoretical framework. The purpose of this study is to examine willingness among homebound adults to adopt healthy behaviors and use technology to maintain religious and spiritual engagements. The study involved 213 adults (18+) who were asked to complete a qualtrics survey. Findings from this study will be used to understand the older adult willingness to use technology as well as their preference on technology types. In particular, study results will have implications relative to the church pastoral council and older adults' caregivers on educating older adults on the use of technology to improve older adult social and faith connections.

CHAPTER II

REVIEW OF LITERATURE

Theoretical Basis

Attachment theory posits that humans seek proximity to a secure attachment figure (Granqvist, Mikulincer, & Shaver, 2010). As persons age, many experience social losses involving the death of intimate family ties and close friendships (Rook & Charles, 2017). Therefore, in the absence of familiar social affiliations, older adults often view God as an "ultimate attachment figure" whom they substitute in place of absent familiar supports (Cicirelli, 2004, Pg. 372). Kirkpatrick posited that attachment to God originates from secure religious beliefs and a relationship with God formed earlier in life and influenced by one's perceived quality of the child-parent relationship (Kirkpatrick, 2005).

Embracing God as a substitute attachment figure may be further explained by Socioemotional Selectivity Theory (SST). Carstensen, Isaacowitz, & Charles (1999) proposed three main theoretical assumptions surrounding SST. First, adults who survive and reach later adulthood develop a sense of urgency relative to future time perspective. In other words, the older the individual the stronger the realization that one's time to death is near. Given this reality, a second assumption maintains that older adults will abandon unrealistic life ambitions and re-prioritize immediate life goals in a way that ensures survival, maintains quality-of-life, and protects them from any undue future

harm. Third, older adults are assumed to turn away from superficial social relations and gravitate toward an interdependence upon emotionally gratifying supports that provide a perception and feeling of safety and security (Carstensen, Isaacowitz & Charles, 1999). It is plausible to further assume that in the absence of familiar or emotionally gratifying supportive relationships, older adults might likely turn to God as a way to regulate negative or mixed emotions (Bradshaw & Kent, 2017).

Baby Boomers and Faith

In recent years, an increased number of Baby Boomers, individuals born between 1946 and 1964, have returned to church after decades of absence (Silverstein & Bengston, 2018) Some experts contend that the combination of losing a significant other (e.g., parent, spouse, child), learning to cope with socio-emotional conditions of loneliness in bereavement, the need for human connection and interaction, and prevailing thoughts of one's own imminent mortality contribute to an increase in religious and spiritual reexamination and exploration in later life (Cuevas et all, 2010; Moremen, 2005; Sliverstein & Bengston, 2018). Most Baby Boomers originated from religious traditionalist families during their childhood, which often creates reluctance to embrace religious innovations in contemporary society (Silverstein & Bengston, 2018). Thus, Baby Boomers generally prefer to return to their religious roots, yet when this is not possible many will initially embrace unfamiliar religious traditions (Silverstein & Bengston, 2018).

Baby Boomers also exhibit significantly different approaches to religious practice compared to their parents and grandparent. In particular, most Baby Boomers endorse a

mixture of spirituality and belief in God rather than adhere to strict conservative religious doctrine or tradition (Sutherland, Poloma & Pendleton, 2003). However, increased time to participate in activities beyond work in retirement, on-going health setbacks, and increased consciousness surrounding dying and death had lead Baby Boomers to be more likely to return to church and embrace religious activities better than their own children or grandchildren (Bengtson et al., 2019). Many have returned to religion in order to seek and find sense of meaning and closure to various distressing life events (e.g., death of spouse, children, or friends; Silverstein & Bengston, 2018). In turn, religious activity is considered by many Baby Boomers to provide renewal through a sense of social reconnection and belonging through a faith community (Silverstein & Bengston, 2018).

Aging of the Church

While Baby Boomers are returning to church, pastoral leaders of church congregation are also aging. Nearly one-quarter of all pastors in the United States are 65 years and older (Cnaan, Boddie, Handy, Yancey, & Schneider, 2002). This growth represents a significant increase from 6% to 17% in just the last 25 years (Earls, 2017). This is partly due to two reasons: (1) Pastors enter ministerial leadership ministry at an older age after haven pursued other careers and occupations and also few younger members are attracted to entrepreneurial vocations rather than filling pastoral leadership roles within the Church. (Earls, 2017). If these trends persist, experts contend that the American church will continue to age, which will result in fewer faith ministries for homebound members, as well as risk of consolidation or church closure.

Technology Use and Older Adults

Reliance upon technology offers an opportunity to fill a gap in church-based religious ministries. The use of technology has become a vital part of everyday social functioning among persons of all ages (Mitzner et al., 2010). Digital technology has proven effective in overcoming barriers related to disablement, geographic distance, and time restrictions placed on opportunities for physical interaction (Hill, Betts and Gardner, 2015). There is growing empirical evidence that technology enables homebound older adults to live a longer independent lives (Mitzner et al., 2010). Although technology offers great benefits for aging, technology adoption rates among older adults are much lower than that of younger adults (Mitzer et al., 2019). Factors such as cognitive decline, poor physical and sensory functioning, and personal anxiety coupled with and reduced self-confidence in learning how to operate technologies have been reported to serve as determinants of whether older adults accept and use of technology (Jia, Lu & Wajda, 2015).

However, studies have shown that despite the various acute and chronic disablements that create barriers to technology acceptance and usage, technology can provide opportunities for communication and social inclusion among older adults (Khosravi, Rezvani & Wiewiora, 2016). There exists what gerontechnologists refer to as a "digital divide," in which age is a critical determinant of whether innovative technologies are accepted and used by older consumers (Friemel, 2014; Latzer et al., 2013; Lee, Chen & Hewitt, 2011; Wei, 2012). In other words, the older the individual, the less likely they are to accept and use technology for navigating life. This tends to be

most evident when a technological device or tool is innovated and requires any additional maintenance costs, extensive operational training and education, or involves artificially intelligent design (Neves & Vetere, 2019)

COVID-19, Technology, and the Church

Technology can be a helpful tool in the delivery of worship services, prayer meetings, weekly sermons, spiritual and inspirational advice, and pastoral consultation to the larger congregation (Young, 2019). Many of these church-based activities can be accomplished without a physical presence at the service, as well as having no contact with the pastoral leadership (Young, 2019). For the past decade, the use of internet for religious purposes have been on the rise in the United States, especially within the mega churches with 2000 or more weekly worshipers (Kelly, 2008). Many pastors have incorporated technology within major pastoral duties such as Sunday sermons, confidential communications, education/care for the laity and virtual counselling sessions (Wyche et al., 2006). Furthermore, the use of technology has made mass distribution of weekly mailings of bulletins and religious literatures easier and more efficient for many church congregations (Wyche et al., 2006). Church leaders have had to further adopt and use technology in the aftermath COVID-19. Many church congregations across the country have invested in technologies that allow for live-streaming and recording virtual worship services and gatherings to those who wish to remain homebound. Such practices have allowed many church congregations to efficiently implement and adhere to Centers for Disease Control (CDC) recommended COVID-19 practices (e.g., face coverings, hand-washing, temperature checks) without compromising the individual right to

assemble for religious purposes, ensuring that vulnerable congregation members who may be older and homebound have an option to actively practice their faith from home without potential of being exposed to COVID-19 (Wildman, Bulbulia, Sosis & Schjoedt, 2020).

Yet, the question remains: Do older members of faith communities intend to continue using technology to practice their faith?

Research Question and Hypotheses

Based on the literature, a key aim of this study was to answer the question: Do adult members of faith communities intend to continue using technology to practice their faith despite the COVID-19 pandemic? To answer this question, the following hypotheses were made:

H1: Older adults will report a greater frequency of intention to adopt and use technology to maintain connection to their faith community compared to younger members especially at this time of social isolation due to the COVID-19 pandemic;

H2: Older adults will report a greater frequency of adhering to CDC oriented COVID-19 recommendations pertaining to behaviors such as social distancing, mask wearing, and handwashing compare to younger adults.

CHAPTER III

METHODOLOGY

Procedures

Adults, aged 18 and older, were included as participants in this study. Participants in this study included N = 213 adults (M = 49.61; SD =19.663). Participants were divided into two age groups: young adults (18-49 years; n = 96) and older adults (50+ years; n = 104). Participants were identified and recruited using an e-mail announcement to be delivered through Oklahoma State University College of Education and Human Sciences and local church communities. Participants were asked to complete an online Qualtrics survey. Participants were first asked to read and provide verification of online consent to participate before being allowed to continue in the study. Participants were offered an incentive via an option to enter chance to win one of five awards in a drawing at the conclusion of the study. Survey completion rates will be tracked. Participants who completed less than 10% of the online survey will not be included within the final analysis.

Measures

Socio-demographics: Single item indicator including age, gender, race, education, marital status were assessed. Age was used as a continuous variable, while sex consisted

of a dichotomous indicator (0 = Female and 1 = Male). All the other variables were evaluated as categorical indicators. Race/ethnicity indicator were 1 = White/ White-Caucasians; 2= Hispanic/Latino; 3 = Asian/Asian American; 4 = Alaska Native; 5 = Black/ African-American; 6 = American Indian; 7 = Native Hawaiian/ Pacific Islander; 8 = Two or more races. Participants were asked to indicate their educational level as 1 = Grade school; 2 = Some high school; 3 = High 20 school diploma; 4 = Vocation degree/trade school; 5 = Some college; 6 = Associate arts degree; 7 = College degree; 8 = Some post graduate education; and 9 = Graduate degree; 10 = Ph.D./ Doctoral degree. Participants were also asked to indicate their marital status as being 1 = Never married; 2 = Married; 3 = Divorced; 4 = Separated; and 5 = Widowed.

Technology Intention: An original survey consisting of 11-items was created to gauge the likelihood of using technology for faith practice in response to COVID-19. Participants were asked to rate each item on a 5-point Likert scale, where 1 = Not at all likely; 5 = Extremely likely. Sample items include, "Read the church bulletin on the internet;" "Watch a live-stream broadcast of Sunday services," and "Listen to a faith-based podcast on the internet, smart-phone, or robotic device like Alexa or Google Home." A composite or cumulative score will be used in order that a high score represents high likelihood of using technology, whereas a low score reflects low likelihood of using technology.

Health Behavior Adherence: An original survey consisting of 9-items was created to gauge how likely participants would continue adhere to recommended CDC practices involving use of facial coverings and social distancing. Participants were asked to rate to

rate each item on a 5-point Likert scale, where 1 = Not at all likely; 5 = Extremely likely. Sample items include, “Skip weekly Sunday service(s) and stay home,” and “Wear a protective mask/facial covering when attend Sunday worship services,” A composite or cumulative score was used in order that a high score represents high likelihood of using technology, whereas a low score reflects low likelihood of using technology.

Technology Use: The Technology Readiness Index 2.0 (TRI; Parasuraman & Colby) was used to evaluate potential to use technology. This is a standardized assessment consisting of 16-items rated on a 5-point scale (1 = Strongly Disagree; 5 = Strongly Agree). Sample questions include, “I find new technologies to be mentally stimulating,” and “I can usually figure out new high-tech products or services without the help of others.” For purposes of maintaining consistency with other frequency analyses within this study, the TRI was recoded into a dichotomous assessment where 0 = No indication of readiness to use technology and 1 = Yes, indication of readiness to use. Participant responses indicative of agreement was coded as 1; whereas participant responses aligned in a more neutral or disagreeing manner were coded as 0. Traditionally, TRI has been reported to evince good reliability ranging from $\alpha = .77$ to $\alpha = .86$.

Analytical Procedure: IBM/SPSS (Statistical Package for Social Sciences) was used to analyze data for this particular study. Data was first assessed relative to descriptive analyses including establishing the mean scores, frequencies standard deviation, and bi-variate correlations across all demographic and study variables.

To test the main study hypothesis, an item-response analysis was used to consider frequency of response per survey question pertaining to intent to use technology. An additional chi-square analysis was conducted to record any significant age group

differences proportionate to sociodemographic attributes among the young adults and the older adults.

CHAPTER IV

RESULTS

Sample demographics are summarized in Table 1. From the major respondents, 59.2% reported being married, 25.2% were never married, 9.7% were divorced, while 5.8% were widows. In addition, a greater proportion of participants indicated their race/ethnicity as White-Caucasian (80.1%), whereas the remaining participants were Hispanic/Latino (5.8%), Asian/ Asian American (2.9%), American Indian (3.4%), Black/African-American (4.9%), and multi-race (2.9%). Furthermore, overall half or 53.9% indicated their religious affiliation as being Protestant (e.g, Methodist, Presbyterian, etc.), whereas a remaining 15.7% were not members of any denominational churche, 18.8% were Roman Catholic, 2.1% were from the Church of Christ, 1.6% were Agnostic, and 1.6% were Atheist. Participants were asked to state the length of being homebound. Overall, 39% responded that they have never been homebound, 8.5% were homebound for less than a week, 20.5% for several weeks, 11.0% for one month, 21.5% for several months, 0.5% for one year, and 3.0% reported being homebound for more than a year. Finally, participants were asked to indicate their level of religiosity and spirituality. Here, 58.4% responded that they were more spiritual than religious, 33.1% were more religious than spiritual, and 8.4% indicated they were neither spiritual nor religious.

Participations were asked to report their ability to adopt and use technology (Table 2). Chi-square testing was conducted to determine significant differences in response frequencies among age groups. Results revealed that older adults (50+) are significantly less likely to figure out new technology X^2 (1, N = 189) = 16.783, $p < 0.001$ (Table 2), and also less likely to be able to explain the mode of operation of high technology without help, X^2 (1, N = 188) = 17.842, $p < 0.001$ (Table 2).

Participants also reported their current technology product use. Chi-square testing was conducted to determine significant differences reported among age groups. Results indicated a significant age-based response differences relative to use of social media X^2 (2, N = 177) = 7.113, $p < 0.05$ and the use of smart/apple watch, X^2 (1, N = 198) = 6.168, $p < 0.05$ (Table 3). In other words, older adults, aged 50 and older, are less likely to positively respond that they engage in using social media or devices such as smart/apple watch compared to younger adults.

Chi-square analyses were further conducted to determine age-related response difference pertaining to frequency of technology use to remain connected to religion. Only one significant difference emerged. In particular, this significant difference pertained to the using the internet to download church news bulletins, X^2 (1, N = 51) = 11.599, $p < 0.001$ (Table 4). Thus, a significantly higher proportion of older adults positively responded that they use the internet to download and view their local church news bulletins compared to those under age 50.

When considering the current COVID-19 pandemic and how study participants might anticipate using technology over the next 12 months, no significant chi-square differences relative to age-based responses emerged. However, differences did evolve

when study participants were asked to think about adherence to COVID-19 CDC oriented guidelines. In fact, a significant response differences emerged relative to willingness to use protective mask while attending religious services, X^2 (4, N =190) = 24.45, $p < 0.001$ and expectations to adhere to social distancing practices when attending church-based activities, X^2 (4, N = 189) = 10.618, $p < 0.05$ (Table 5). In particular, older adults, aged 50 and older, emerged as more likely to be expected to wear protective masks and adhere to social distancing recommendations while attending church based activities than those under 50 years of age.

CHAPTER V

DISCUSSION

The purpose of this study was to explore the intents of older adults on the adoption and use of technology for faith-based activities during the COVID-19 pandemic. Findings of this study indicate mixed results relative to support for the primary study hypothesis. Three key results emerged. First, older adults in this study indicated feeling incapable of giving advice on new technologies, as well as needing assistance to operate new technologies. Second, it appears older adults are more likely to use internet communication technologies (ICT) to remain connected to their faith communities. Third, it appears that older churchgoers are more apt to anticipate adhering to CDC guidelines concerning mask wearing and social distancing practices over the next 12 months than their younger counterparts.

Technology Adoption and Use

Experts contend that there is an on-going "technology divide" relative to age differences in technology use and adoption. A technology divide is best defined as difference between individuals who have access to technology and can use them and those who do not have access to, or do not have the knowledge base or resources to use technology properly (Neves & Vetere, 2019). This divide typically expands with age. In other words, the older the individual the less likely they will access and use technologies

(Neves & Vetere, 2019). Results from this study lend support for any existing digital divide among the older adults and younger adults. From our study, older adults do not intend to use technological devices to virtually connect to church activities. Their preference only lies in downloading church bulletins from the internet to stay up-to-date with church activities. Also, they intend to maintain social and faith connections by adhering to the CDC guidelines while attending church based activities.

Age is certainly a significant determinant of technology use (Friemel, 2014). Moreover, potential consequences of the aging process such as decline in memory, reduced motivation, self-efficacy, and costs of technology often deter older adults from learning how to use new technologies (Lee, Chen & Hewitt, 2011). It is plausible to argue that such factors may have contributed to the technology divide we observed in the present study between the young and older adults.

Alternatively, several factors may put an individual at an advantage or disadvantage to comprehend instructions and using technology. Having a higher education, an actively involved partner, occupation professionalism (retired or not), and male genderism are advantages to technology use (Peacock & Kunemund, 2007). In contrast, racial and ethnic minorities, the less educated, individuals living alone, female, the unemployed, and people with low income are less likely to use technology (Van Deursen & Helsper, 2015). In addition, Poorly-sized and colored components of computer programs can lead to frustration on the part of the users especially older adults. Therefore, Older adults with vision impairment relative to aging find it difficult to adopt technology use (Williams, Ul Alam, Ahamed, & Chu, 2013). Geographical location is yet another major factor. Without a doubt, urban dwellers have better access to internet connectivity and advanced technological devices than rural dwellers (Wilson,

Wallin & Reiser, 2003). Further research is needed to investigate the interaction between education, race, and geography and the persistent technology divide between young versus old.

Technology and Connection to Church

Results from this study suggest that older church goers are more apt to use ICT to access their local church news bulletins. However, this finding may be an artifact of age composition. Young seniors (65-74) are 60% more likely to use the internet while old seniors (age 75+) are 30% likely to use internet. (Friemel, 2014). Some researchers have claimed that internet usage is on the rise among older adults (Huber & Watson, 2013). According to Hulur & Macdonald (2020), 73% of older adults (65+) in the United States use the internet in the year 2019. Results from this study lend support to older adult's internet use and adoption. Yet, very old age may represent a limitation of ICT use. Only 34% of older adults age 75+ are reported to engage in homebound internet use. (Pew Internet and American Life Project, 2012a). In more recent years, 49% of older adults have shown interest in learning to use technologies like smartphones and computers although they might not learn as fast as the young adults. (Brahmandam et al., 2016). It is possible that this represents a generational shift in ICT use. In other words, with each successive age cohort comes difference preferences relative to what type of technology might be used. It is possible that younger church goers prefer smartphone and app-based technologies above and beyond ICT. Therefore, there is need for technology developers to integrate age specific applications that support the preference of each age cohort.

Adherence to CDC guidelines

According to CDC, the greater an individual's age and underlying medical conditions, the greater the risk of severe illness from COVID-19 (Zheng et al, 2020). Therefore, it is important that older adults and families understand these factors and be deliberate in taking appropriate precautions in their daily living (CDC, 2020). The CDC, (2020) has advised that older church congregations and staffs at higher risk of severe illness should be exempted from in-person worship and also given safer options, such as technology to participate in the church worship sessions. Results from this seem to confirm that adults more so than their younger counterparts expect to adhere to CDC recommended mask-wearing and social distancing while attending church-based activities. Thus, it appears that older adults do intend to take precautions when practicing their faith. Among those that might possibly stay home, results of this study seems to imply that older adults have no significant preference for using internet platforms like zoom or YouTube, and neither do they prefer television for the delivery of faith-based activities probably due to little or no education on the use of these technologies this is in contrast to studies suggesting that older adults tend to prefer television or live-streaming for information delivery including health and travel information (Jacob et al., 2017; Patterson, 2007; Wicks 2004). Interestingly, the results revealed that older adults more significantly favor the use of ICT only to read church bulletins so as to stay informed and connected to their faith communities from a distance.

Limitations

Several limitations of the current study should be acknowledged. First, the study involved a cross-sectional designed study. Causal inference cannot be made relative to the results. Nor do the results reflect long-term processes linked to technology use or church-going behavior. Second, the study employed an internet-based delivered survey. The study did not involve face-to-face interviewing thus creating potential for missing or incomplete data. In fact, 10% of the participants who registered for the study did not complete any survey items. It is possible that online survey formats may attract a more selective sample of able-bodied and educated participants who have access to technology resources, as well as feel comfortable operating and navigating computers. Therefore, population used is not a representation of the general adult population.

Implications and future directions

Results of this study have implication relative to informing pastoral ministers, family caregivers, and others who interact with homebound older adults, about the various technology tools that have potential for enhancing ministry to older homebound adults. Technology integration used to serve older adults may possibly allow for better management and coordination of outreach services delivered to older adults. Continuous and persistent use of such technology offers potential to increase sense of faith community connectedness and belongingness among older churchgoing members who seek inclusion while having to remain home for various health reasons, or due to safety and health protocols during a pandemic situation. Future research should aim at

developing interventions tailored towards age specific (50+) education on the use of modern technology.

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APPENDICES

Oklahoma State University Institutional Review Board

Date:	07/11/2019
Application Number:	HS-19-42
Proposal Title:	Facilitating Artificially Intelligent Technology for the Homebound: Project FAITH
Principal Investigator:	Alex Bishop
Co-Investigator(s):	
Faculty Adviser:	
Project Coordinator:	
Research Assistant(s):	
Processed as:	Exempt
Exempt Category:	

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject

population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.

2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-7443377 or irb@okstate.edu.

Sincerely,

Oklahoma State University IRB

SURVEY QUESTIONS

1. **AGE:_____**

2. **GENDER**
   _____ Male _____ Female

3. **RACE/ETHNICITY**
   _____ White/White-Caucasian
   _____ Hispanic/Latino Origin
   _____ Asian or Asian-American
   _____ Black/African-American
   _____ American Indian
   _____ Native Hawaiian/Pacific Islander
   _____ Alaska Native
   _____ Other (specify: _____)
   _____ Multi-racial (specify: _____)

4. **EDUCATION (What is the highest level of education you have received)**
   _____ Grade school (K-8)
   _____ Some high school
   _____ High school diploma
   _____ Trade school or vocational degree
   _____ Some college
   _____ Associate Arts degree
   _____ College degree
   _____ Some post graduate education
   _____ Graduate degree
   _____ Ph.D./Doctoral degree

5. **MARITAL STATUS (What is your current marital status)**
   _____ Never married
   _____ Married
   _____ Divorced
   _____ Separated
   _____ Widowed

6.) What is the longest period of time you have ever been homebound and unable to attend church (e.g., Sunday services, Bible study/prayer groups, etc.) prior to the COVID-19 pandemic?

____ Never ____ Less than one week ____ Several weeks ____ One month
____ Several Months ____ One year ____ More than one year

7.) What faith-based activities have you voluntarily engaged on your own while being homebound from church related activities (e.g., Sunday services, Bible study/prayer groups, etc.) due to COVID-19 pandemic? Check all that apply:

____ Prayer
____ Reading the Bible
____ Watching televised or online (e.g., internet) religious services
____ Participating in a teleconference prayer meeting over a computer, I-pad, or smart phone (e.g., Zoom, Skype)
____ Participating in a teleconference Bible study over a computer, I-pad, or smart phone (e.g., Zoom, Skype)
____ Talking on phone with pastor/minister/deacon
____ Listening to religious books on tape
____ Listening to religious videos/podcasts on the internet/computer
____ Listening to religious hymns/music on the radio/internet
____ Playing religious themed games (e.g., Bible trivia)
____ OTHER (Explain: _____)

8.) What faith-based ministries have you received from church leadership (e.g., minister/clergy, lay ministers, etc.) while you homebound due to the COVID-19 Virus (Check all that apply)

____ Visitation by pastor/deacon _____ Communion _____ Prayer/prayer group

____ Visit by church nurse/caregiver _____ Delivered meals _____ Home maintenance/repair

____ Radio/television/internet service _____ Music ministry _____ Stephen ministry

____ Bible/Scripture study _____ Transportation _____ Mobile books/podcasts

____ Confession _____ Pastoral counseling ____ Phone call/e-mail

Other (Please describe) _____

_____

Think about the impact that the COVID-19 pandemic has had on your religious and spiritual life over the past few months. Read each question and indicated the likelihood that you might engage in the following behaviors and practices over the next 12 months.

During the next year, how likely is it that you will. . .

1. Regularly attend weekly Sunday worship service(s) in-person.

   ____ YES ____ No

2. Practice social distancing during Sunday worship services by staying approximately six feet apart from others.

   ____ YES ____ No

3. Wear a protective mask when attending Sunday worship services.
   ____ YES ____ No

4. Listen to a Sunday worship service on a local radio station.
   ____ YES ____ No

5. Watch a church worship service, sermon, or testimonial on broadcast television.
   ____ YES ____ No

6. Watch a live-stream (e.g., Zoom, Facebook live, YouTube) broadcast of Sunday services
   ____ YES ____ No

7. Shake or hold hands during Sunday worship services.
   ____ YES ____ No

8. Attend a live-stream Bible study, prayer meeting, or spiritual retreat over the internet (e.g. Zoom, Facebook Live, You Tube).
   ____ YES ____ No

9. Use the internet or robotic device, such as Amazon Alexa or Google Home, for daily or private devotional.
   ____ YES ____ No

10. Skip weekly Sunday worship service(s) and stay home.
    ____ YES ____ No

11. Use a faith-based app on the internet or smart phone for prayer, devotion, scripture reading, or other religious activity.
    ____ YES ____ No

12. Use a robotic device (e.g., Amazon Alexa, Google home) to listen to religious hymns and music
    ____ YES ____ No

13. Read the church bulletin on the internet, tablet device, or smart phone.
    ____ YES ____ No

14. E-mail or text message church leadership (e.g., minister/clergy, lay ministers).
    ____ YES ____ No

15. Listen to a faith-based podcast on the internet, smart phone, or robotic device (e.g. Amazon Alexa, Google Home).

    ____ YES ____ No

16. Attend church-hosted social functions such as potluck dinners, concerts, ministry fairs, or other activities.
    ____ YES ____ No

17. Use an assistive device (e.g., walker, headphones, reading magnifier) during Sunday worship services.
    ____ YES ____ No

18. Remain homebound from church due to illness, injury, or disablement.
    ____ YES ____ No

19. Need someone other than a family member to transport you to and from church for Sunday worship services.
    ____ YES ____ No

20. Wash or sanitize your hands before and after attending Sunday worship services.
    ____ YES ____ No

TECHNOLOGY BELIEFS

Please circle the number the best represents your personal beliefs about technology <u>at this moment.</u>

1. I find new technologies to be mentally stimulating.

   1 2 3 4 5

2. If I provide information to a machine or over the internet, I can never be sure it really gets to the right place.

   1 2 3 4 5

3. I like computer programs that allow me to tailor things to fit my own needs.

   1 2 3 4 5

4. I do not consider it safe to do any kind of financial business online.

   1 2 3 4 5

5. Other people come to me for advice on new technologies.

   1 2 3 4 5

6. I worry that information I sent over the internet will be seen by other people.

   1 2 3 4 5

7. I can usually figure out new high-tech products or services without help from others.

   1 2 3 4 5

8. When I get technical support from a provider of a high-tech product or service, I sometimes feel as if I am being taken advantage of by someone who knows more than I do.

   1 2 3 4 5

9. In general, I am among the first in my circle of friend to acquire new technology when it appears.

   1 2 3 4 5

10. It is embarrassing when I have trouble with a high-tech gadget while people are watching.

    1 2 3 4 5

Table 1.

Frequencies, Mean, and Standard Deviations of Sample Demographic

Variables	Frequency	Percentage (%)	(N= 200) Mean	Standard Deviation
Age			49.61	19.663
Age Groups				
18-49	96	48.0		
50+	104	52.0		
Sex				
Female	160	77.3		
Male	47	22.7		
Marital Status				
Never Married	52	25.2		
Married	122	59.2		
Divorce	20	9.7		
Widowed	12	5.8		
Ethnicity				
White/ White-Caucasian	165	80.1		
Hispanic/ Latino Origin	12	5.8		
Asian/ Asian American	6	2.9		
Black/ African-American	10	4.9		
American Indian	7	3.4		
Multi-race	6	2.9		
Educational background				
High school diploma	6	2.9		
Some college degree	83	39.9		
Some post grad education	11	5.3		

Table 1 cont'd

Graduate degree	107	51.4
Current religious affiliation		
Roman Catholic	36	18.8
Protestant	103	53.9
Church of Christ	4	2.1
Mormon/ L.D.S	1	0.5
Non-denominational	30	15.7
Agnostic	3	1.6
Atheist	3	1.6
Other	11	5.8
Length of being homebound		
Never	79	39.5
Less than one week	17	8.5
Several weeks	41	20.5
One month	22	11.0
Several months	43	21.5
One year or more	7	3.5
Self-spirituality rating		
More spiritual	111	58.4
More religious	63	33.1
Neither	16	8.4

Table 2

Frequency of technology adoption

Questions		18-49 n(%)	50+ n(%)	Total	Chi-Square	df
Technology is mentally stimulating	Y	70 (76.0)	65 (67.0)	135		
	N	22 (23.9)	32 (32.9)	54		
Never sure internet information get to the right place	Y	34 (36.9)	25 (26.9)	59		
	N	58 (63.0)	71 (73.9)	129		
With computer I can tailor things to fit my needs	Y	84 (91.3)	85 (89.4)	169		
	N	8 (8.6)	10 (10.9)	18		
Financial business is not safe online	Y	10 (10.8)	18 (18.5)	28		
	N	82 (89.1)	79 (81.4)	151		
Give others advice on new technologies	Y	56 (60.8)	32 (32.9)	88	16.783***	1
	N	36 (39.1)	65 (67.9)	101		
Information sent over the internet might be seen by others	Y	50 (54.9)	41 (43.1)	91		
	N	41 (45.0)	54 (56.8)	95		
Figure out new high-tech products without help	Y	71 (77.1)	47 (48.9)	118	17.842***	1
	N	21 (22.8)	49 (51.0)	70		
Taken advantage of when I ask for technical support	Y	16 (17.3)	16 (16.8)	32		
	N	76 (82.6)	79 (83.1)	155		
Acquire new technology before my pears	Y	27 (29.3)	18 (18.7)	45		
	N	65 (70.6)	78 (81.2)	143		
Figuring out high tech when people are watching is embarrassing	Y	31 (34.0)	37 (38.1)	68		
	N	61 (67.0)	60 (61.8)	120		

Note: Only significant analyses displayed, where *p< .05 **p< .01 ***p<.001

Table 3

Frequency of current technology product use

Questions		18-49 *n* (%)	50+ *n* (%)	Total	Chi-square	df
Have internet in your home?	Y	90 (94.7)	94 (92.1)	102		
	N	5 (5.2)	8 (7.7)	13		
Use social media at home?	Y	88 (92.6)	83 (80.5)	171	7.113*	2
	N	2 (2.1)	4 (3.8)	6		
Smart phone/I-phone/Android home?	Y	89 (93.6)	91 (88.3)	180		
	N	6 (6.3)	12 (9.2)	18		
Computer/laptop/I-Pad in your home?	Y	89 (93.6)	92 (70.7)	181		
	N	6 (6.3)	11 (8.6)	17		
Alexa/Echo/Google Home in your home?	Y	34 (35.7)	32 (31.0)	66		
	N	61 (64.2)	71 (68.9)	132		
Smart TV system in your home?	Y	51 (53.7)	43 (41.7)	94		
	N	44 (46.3)	60 (58.2)	104		
Smart/Apple Watch?	Y	30 (31.5)	17 (16.5)	47	6.168*	1
	N	65 (68.4)	89 (86.4)	151		
Apple Fit bit?	Y	10 (10.5)	12 (11.6)	22		
	N	85 (89.4)	91 (88.3)	176		
Life alert in your home?	Y	1 (1.0)	1 (0.9)	2		
	N	94 (98.9)	102 (99.0)	196		

Table 3 Cont'd

Smart home security system?	Y	14 (14.7)	15 (14.5)	29
	N	81 (85.2)	88 (85.4)	169
Smart Thermostat? (e.g., Nest)	Y	9 (9.1)	11 (10.6)	20
	N	89 (90.8)	92 (89.3)	178
Others	Y	3 (3.1)	5 (4.8)	8
	N	92 (96.8)	98 (95.1)	190

Note: Only significant analyses displayed, where $^{*}p< .05$ $^{**}p< .01$ $^{***}p<.001$

Table 4

Frequency of technology-based faith activities done while homebound

Questions	18-49 *n* (%)	50+ *n* (%)	Chi-square	df
Used smartphone app for prayer/bible study?	53 (55.2)	41 (39.4)	5.063*	1
Watched televised religious services	76 (79.1)	79 (75.9)		
Prayer meeting using computer/iPad	25 (26.0)	27 (25.9)		
Bible study over computer or smart phone	31 (32.3)	23 (22.1)		
Talked on phone with pastor/minister/	21 (21.8)	27 (25.9)		
Listened to religious books on tape	9 (9.3)	7 (6.7)		
Listened to religious videos/podcast on the internet/computer	34 (35.4)	42 (40.3)		
Listened to religious hymns/ music	47 (48.9)	42 (40.3)		
Played religious themed games (Bible trivia)	4 (4.1)	2 (1.9)		
Downloaded church bulletin from the internet	14 (14.5)	37 (35.5)	11.599***	1
Used religious/spiritual apps	23 (23.9)	25 (24.0)		
Others	13 (13.5)	17 (16.3)		

Note: Only significant analyses displayed, where *p< .05 **p< .01 ***p<.001

Table 5

Frequency of anticipated health faith behavior in the next year

Questions		18-49 *n* (%)	50+ *n* (%)	Total	Chi-square	df
Wear a protective mask when attending Church.	Y	51 (54.8)	81 (83.5)	132	24.45***	4
	N	42 (45.1)	16 (15.4)	58		
Social distance when attending church	Y	69 (75.0)	84 (87.5)	153	10.618*	4
	N	24 (26.0)	12 (12.5)	36		
Shake or hold hands during Sunday worship services.	Y	28 (30.1)	17 (17.3)	45		
	N	65 (69.8)	81 (82.6)	146		
Wash or sanitize your hands before and after attending church.	Y	79 (84.9)	88 (91.6)	167		
	N	14 (15.0)	8 (8.3)	22		
Attend church-hosted social functions	Y	37 (39.7)	24 (24.4)	61		
	N	56 (60.2)	74 (75.5)	130		

Note: Only significant analyses displayed, where *p< .05 **p< .01 ***p<.001

VITA

Christianah Adebayo

Candidate for the Degree of

Master of Science

Thesis: A DESCRIPTIVE ANALYSIS OF HOMEBOUND ADULTS: BEHAVIORAL ADHERENCE, TECHNOLOGY USE, AND FAITH CONNECTION AMID COVID-19.

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Completed the requirements for the Master of Science in Human Development and Family Science at Oklahoma State University, Stillwater, Oklahoma in December, 2020.

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