Capitalizing and Compensating

Older Adults' Religious and Spiritual Uses of Technology

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Abstract

This study explores how older adults use information and communication technologies (ICTs) in their spiritual and religious lives. How widespread is their use? What kinds of ICTS do they use and for what reasons? What impact do they have on their religious and spiritual lives? We explored these questions by collecting interviews with 90 older adults, average age 77, from six major Judeo-Christian faith traditions. The sample was developed from nominations by pastors, priests, and rabbis in three southern California cities. Data were collected through in-depth, semi-structured interviews and analyzed through abductive analysis. Many older adults in our sample reported using ICTs to assist their devotional lives—nine in ten of our participants provided examples, thus dispelling technology as merely a tool for the young to incorporate into their religious lives. An unexpected finding of the research was the wide variety of ICT usage mentioned by these elderly participants —over 15 distinct ones were mentioned. The reasons for using ICTs fell into two primary categories: compensating for age related changes and capitalizing on unique opportunities for growth in later life. The results demonstrate support for Carstensen's Socio-Emotional Selectivity Theory and have implications for practitioners working with older adults, such as social workers and clergy, as well as for marketers in industry.

Keywords: religion; spirituality; information communication technologies; gerotechnology; aging

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A persistent stereotype about older people is that they are reluctant, fearful, or incompetent in adapting to the use of digital technologies (McCann and Keaton 2013; Niemelä-Nyrhinen 2007). There is increasing evidence, however, that the use of technology by seniors is growing. A 2017 nationwide survey noted that four out of ten Americans over age 65 own smartphones, a number that has more than doubled since 2013. Over two-thirds of older adults now use the Internet and one-third now own a tablet or e-reader (Pew Research Center 2017).

At the same time as seniors' use of technology is expanding, another trend is continuing: older Americans are more actively involved in religious and spiritual pursuits than any other age group (Silverstein and Bengtson 2017). As they near the end of life, many older adults describe later life as an opportunity to grow in their religious and spiritual development (Bengtson, Kang, Endacott, Gonzales, and Silverstein 2018). Many seniors work to redefine their relationships with themselves, others, and the world (Carstensen 1992; Tornstam 2005). These changes may prompt spiritual growth through self-examination, the relaxation of defenses, and a more present and attuned experience of life (Loder 1998).

A body of research exists on older adults' use of technology (Bowen 2012; Chappell and Zimmer 1999; Charness and Boot 2009; Gatto and Tak 2008; Ismail and Wan Mohd Isa 2014; Marquié, Jourdan-Boddaert, and Huet 2002; Lee and Coughlin 2014). While other areas of research encompass technology and religion (Campbell, Bellar, and Cho 2014; Hughes-Rinker, *et al*., 2016) or older adults and their spiritual and religious lives (Atchley 2009; Bengtson and Deliema 2016; Bengtson, Endacott, Kang 2017; Bengtson, Kang, Endacott, Gonzales, Silverstein 2017), few studies look at older adults' use of technology for religious and spiritual purposes. This study situates itself within this gap to explore the intersection of aging, religion, spirituality, and technology. Individuals whose time would not otherwise be spent earning money, such as retired individuals, have been shown to devote more time to religious activities (Azzi and Ehrenberg 1975), and may also use their surplus time to utilize technology for religious education and practice. Furthermore, technology can also benefit important subgroups of older adults, such as those with limited mobility. Because technology can facilitate connections across time and space (Bernal 2005 Nardi and Harris 2009), it could connect these older adults with religious and spiritual communities that they are not able to access in person.

In this paper we explore the use of what has alternately been called "gerotechnology" (Fozard *et al*. 2000) or "gerontechnology" (Micera, Bonato, and Tamura 2008), e.g. social networking, smartphones, tablets, internet, Skype, podcasts, in the spiritual and religious lives of older adults. How do seniors make use of such technologies? What are the benefits they see and the barriers they face in doing so? In exploring

these questions, we offer insight into the rich and varied roles that technology plays in the lives of older adults and discuss the theoretical and practical implications of older adults' use of technology for religious and spiritual purposes.

Older Adults and Their Use of Technology

The adoption of Information and Communication Technologies, or ICTs, appears to be rapidly increasing among older adults ages 65 and above, particularly for those who have attained a college education (Pew Research Center 2017). Older adults aged 65 years appear to differ in their technology use than those aged 80 years and above—indeed, a PEW Research Report from 2017 showed that 95% of older adults ages 65-69 owned a cellphone while only 58% of older adults aged 80+ did. A representative study of a regional section of the United States conducted by Vroman, Arthanat, and Lysack (2015) corroborated that those most likely to use ICTs were between 65 and 70 and also found that they were more likely to live with a spouse. In this study, however, older adults are operationalized as those aged 65 and above. Cohort effects among older adults found in previous research are noted when appropriate.

While older adults do tend to pursue a narrower range of goals online than their younger counterparts, both groups see the internet as central to their lives (Loges and Jung 2001). In Mitzner *et al.*'s (2010) study, older adults' positive attitudes about digital technologies outnumbered their negative attitudes. These findings suggest that older adults' use of digital technologies tend to defy popular perceptions that they are reluctant to embrace technology and its potential benefits (Selywn 2004).

Older adults may be especially well-poised to benefit from information technologies' contributions. Past research suggest that ICTs offer means for self-expression, education, and entertainment in the face of physical decline and lack of control (Pekkarinen and Melkas 2012) as well as for a sense of agency over the monitoring of their own health care (Lutz 2015). In an experimental intervention study, White *et al.* (1999) reported that older adults who used computers saw a decrease in loneliness and an increase in psychological well-being. These older adults used computers primarily to access the Internet and to send emails to family and friends. Using technology may also help older adults retain their independence and autonomy during the aging process (Mynatt and Rogers 2001).

ICTs can also foster new forms of social connection and participation. Biniok and Menke (2015) found that when issued tablets older adults in rural areas used them to engage in existing participation spaces (for example, fostering deeper relationships among older adults and their acquaintances from various clubs or associations) as well as to form new ones (for example, by connecting older adults to past school mates whom they previously had been unable to contact). This work suggests that technology can function as a "social junction" for those who are geographically distant (Biniok and Menke 2015, 172). Anthropologists who study individuals' technological lives also show that digital technologies afford opportunities for users to form relationships across time and space (Nardi and Harris, 2009), embody roles in virtual spaces that would be denied them in face-to-face interactions (Boellstorff 2011), maintain transnational identities (Kim 2017), and construct communities even in the face of geographic dispersion (Bernal 2005). For aging adults, who may face social isolation, experience physical and mental changes, and have trouble accessing meaningful communities, technology can provide new ways of participating in social worlds.

While ICTs offer promising avenues for improving older adults' quality of life, their likelihood to use technology is affected by both individual and social factors (Lee and Coughlin 2014). For example, the likelihood of older adults' technology use is affected by its affordability and their prior experience with ICTs, as well as by the degree of validation and support they receive (*ibid.*). Older adults must also see

technology as addressing their personal needs. Chappell and Zimmer (1999) found that seniors' receptivity to technology was influenced by the level of concern they had for problems that could be solved through its use. As communication technologies provide older adults with connectedness, satisfaction, utility, and positive learning experiences (Gatto and Tak 2008), they may reformulate habits and practices such that they incorporate ICTs (Schreurs, Quan-Haase, and Martin 2017).

However, older adults also face challenges and difficulties in their adoption and use of ICTs, such as frustration with technology, physical and mental limitations that inhibit their use, and mistrust of technology in general (Gatto and Tak 2008). Older adults are more likely to underestimate their computer knowledge than younger people (Marquie, Jourdan-Boddaert, and Huet 2010) and must overcome perceptions of technology as difficult to use (Vroman *et al*. 2015). Older adults who were not exposed to computers in the workplace may be less interested in learning how to use them later in life and may lack the sufficient dexterity and vision to operate them (Selwyn 2004). However, these limitations can be overcome (Charness and Boot 2009). In addition to physical and attitudinal limitations, cultural discourses around older adults' use of technology may pose a challenge. For instance, the American Association of Retired People (AARP) depicted technology most often as a health and medical tool rather than as a tool for better social and emotional well-being (Bowen 2012). Compared with these medicinal uses, older adults appear to be far less likely to be presented with opportunities to see technology as a valuable tool for enhanced social relationships or for enhanced quality of life . Rarer still is the opportunity to see technology as a useful tool in their religious and spiritual lives.

Using Technology for Religious and Spiritual Purposes

Technology is now a part of many individuals' everyday religious and spiritual lives. Increased use of technology via smartphones, tablets, and laptops has facilitated the movement of religion from the public sphere into the private sphere (Hughes Rinker *et al.* 2016) and the use of technology for religious and spiritual purposes appears to be growing. According to Buie and Blythe (2013), there are over 6,000 available applications (commonly abbreviated to "apps") related to prayer, religious trivia and stories, spiritual guidance, and religious education for users to download onto smartphones, tablets, and computers. These apps can be used to aid users in their religious practice or may have religious content embedded within them for users to consume (Campbell *et al.* 2014).

ICTs may also change the scope and reach of institutionalized religious practice. For example, Hughes Rinker *et al.* (2016) found that young people often used ICTs such as devotional apps and religious podcasts to substitute for in-person attendance at religious services. However, Bell (2006) points out that some religious leaders have seen technology as an extension of religious institutions, as illustrated in a search for a patron saint of the internet by the Catholic Church. Church leaders may also use technology to accomplish pastoral care over distance (Wyche *et al.* 2006). Rising popularity of applications to read the Bible and other sacred texts make texts and commentary widely available for users to access and discuss across time and space (Hutchings 2015).

While mobile spiritual applications and other forms of religious and spiritual technologies (such as Bible software or religious blogs and newsletters) are on the rise, the lived experiences of people utilizing these technologies are relatively opaque, especially among older people (Ahmad *et al.* 2015). Older adults may draw on these technologies to facilitate their religious and spiritual development in creative ways. For example, elderly Muslims have used spiritual apps to remind them to pray throughout the day (Ismail, Noor, and Isa 2014; Ahmad and Razak 2013). While scholars have outlined the implications of technology for older adults' health and mobility (Plaza *et al.* 2011), the possibilities of technology use for connecting older adults to local congregations and other collectives, facilitating spiritual practices, and learning more

about religion and spirituality are ripe for exploration.

To more fully understand how older adults make use of technology in their religious and spiritual lives, we address two sets of questions in this article. First, what role does technology play in older adults' religious and spiritual lives—that is, what technologies do they actually use and what is it that they do with them? Where does technology fit in their devotional practices, religious experiences, or spiritual life? Second, what do older adults perceive are the benefits of these technologies for their spiritual or religious growth? What possibilities for technology are realized in their lives? To explore these questions, older adults themselves should be asked about how they use technology in their religious and spiritual lives.

Research Methods

Context and Sample

To explore the role technology plays in the spiritual and religious lives of older adults, we used data from the larger research project of the Religious Development in Later Life study (RDLL) (see Bengtson, Endacott, and Kang 2017 for details about the methods and procedures of this research). The data in this article are drawn from this larger study. The sample was drawn from two southern California areas. The first was a coastal community with a wide range of economic levels and a relatively high proportion of retirees. Since the original goal of the study was to explore the spiritual lives of religious older adults, we obtained the sample through contacts from pastors, priests, and rabbis. The churches were strategically selected in order to represent a variety of faiths and socio-economic areas. For example, one Catholic church was located in a largely working-class suburb of mixed white and racial/ethnic minorities, while another was located in a suburb populated by a majority of middle to upper class white residents, one of the wealthiest communities in the state. However, this strategy did not initially result in sufficient ethnic and racial diversity so a second sample area was chosen, a Los Angeles suburb. This resulted in an increased number of Black and Jewish participants.

The congregations from which these participants were drawn varied greatly in size, wealth, racial/ethnic makeup, and faith tradition. Four participants came from a store-front Pentecostal church in which the pastor reported the average Sunday attendance as "35 to 40"; four others attended a nondenominational evangelical church meeting which offered four services on Saturday and Sunday with 1,200 total attendees. One pastor said his church annual budget was "around $10,000" (he said he refused to take a salary); another said that the budget was "somewhere around $2 million." We limited the scope of our sample to Judeo-Christian faith traditions: Evangelical, Mainline Protestant (Presbyterian, Methodist, Episcopalian), Historically Black Churches (AME), Roman Catholic, Jewish (Reform and Conservative), and Other (Unitarian, Unity). This resulted in a sample of 90 older adults: 22 Evangelicals, 20 Mainline Protestants, 13 Catholics, 13 Black Protestants, 13 Unitarian/Unity, and nine Jews. The average age in our sample was 77. Fifty-five participants were female and 35 male. This was overall an advantaged sample—participants were in good health, most owned their own homes, and most had attained at least a college education (the sample as a whole had an average of 16.4 years of schooling). In terms of race and ethnicity, 14 participants were identified as African American, one as Asian, four as Latino, and one as Native American. The remaining 70 were white. All names used in this article are pseudonyms. Research methods were approved by an Institutional Review Board to ensure adequate human subjects protection. A summary of the descriptive statistics of the sample is shown in Table 1.

Religious Tradition	Age (Avg.)	Sex		Education (Years)	Marital Status				N
		M	F		Single	Wid-owed	Married	Divorced	
Black Protestant	76	5	8	15	1	3	8	1	13
Evangelical	75	9	13	15.7	1	0	16	5	22
Mainline Protestant	74.5	6	14	17	0	4	11	5	20
Jewish	84.5	3	6	17.1	1	2	6	0	9
Catholic	78.5	6	7	16	0	4	7	3	13
Unitarian/Other	77.4	6	7	18	1	0	11	0	13
TOTAL	77.7	35	55	16.5	4	13	59	14	90

Table 1: Sample characteristics

Data Collection

To learn more about the spiritual and religious lives of older adults, data were collected through semi-structured, in-depth interviews, each lasting from one to two hours, which were recorded and then transcribed. Older adults were often interviewed in their own home, but interviews were also conducted at local parks and retirement communities. These interviews spanned a variety of topics, from the participants' religious biography to turning points in their spiritual lives. We asked questions such as, "What role does religion and spirituality play in your life today?" and further inquired as to whether they prayed, read scripture, used other spiritual or religious readings, or meditated. We asked whether they had experienced any changes in their spiritual or religious lives during the past 10 years or since they had retired, and why. We concluded by probing their general sense of optimism or pessimism by asking questions about the future of the country and religion more specifically. Immediately following the interview, the interviewer wrote a summary of the interaction in field notes. Both the field notes and a transcribed version of the recorded interview were uploaded into the data analysis software MAXQDA.

Because this study developed out of a larger project on the spiritual and religious lives of older adults, the majority of questions centered on participants' religious and spiritual development, practices, and beliefs. However, we noticed that many older adults had much to say about the ways they used technology for religious and spiritual purposes. Though not intended as a focus of our larger study, we turned to investigating how older adults spoke about technology across the interviews.

Data Analysis

To analyze our data, we drew on an abductive analysis approach (Reichertz 2007). Abductive data analysis combines the inductive process related to Grounded Theory (Glaser and Strauss 1967) and

deductive processes. The deductive process allowed us to ask focused questions of our data (e.g., What is the role of technology in older adults' religious and spiritual lives?) as informed by previous literature. We began the research with some general questions related to religion, aging, and technology informed by previous work on this topic (Strauss and Corbin 1990). This process allowed us to flag relevant portions of interviews that could address our research questions.

We then drew on a more iterative approach by allowing codes to emerge from the data itself. We divided the interviews equally between three researchers began the process of open coding—a process that allowed us to describe and categorize portions of interviews based on their content. For example, we described activities that older adults did with technology with codes like "listening to a devotional" or "reading the Bible on an app." We could then develop a domain analysis of the types of activities that are relevant for older adults in this context (Spradley 1979). We also openly coded what older adults saw as the benefits and capabilities of technology with codes like "learning more about religious history" or "connecting with religious friends." After each researcher had coded a portion of the interviews, the team came together for weekly meetings to discuss findings and refine the codes further. This process of consensus coding (DeSantis and Ugarriza 2000) allowed the research team to ensure that they were applying codes uniformly. From these open codes, axial codes were developed to categorize these benefits that appeared meaningful from the perspectives of the participants. We developed the axial codes "compensation" and "capitalization" to describe the ways in which older adults used technology to compensate for challenges and capitalize on resources for religious and spiritual purposes, respectively. We then returned to the data to look for patterns and rich exemplars of how older adults used technology to attain these benefits.

Technology emerged serendipitously from our data. If it had been an original focus, we might have expected to find that the majority of our participants agreed with Caleb (72, AME) who reported, "I'm the older generation, I don't deal with computers that much. The phone, all I do is talk on the phone." However, while a few individuals shared Caleb's disinterest in technology, an unexpected finding of our study was most of our participants reported that they incorporate technology into their religious and spiritual lives. The next section describes the ways in which older adults used technology for religious and spiritual purposes, how this usage made a difference in their religious and spiritual lives, and the effect it had on their participation in religious and spiritual communities as well as their individual spiritual and religious development.

Findings

Among the 77% of participants that stated they use technology within their religious and spiritual lives, we coded 15 distinct religious or spiritual uses of technology. Most frequently, these included reading the Bible via app, performing internet research on religious topics, watching sermons through streaming or DVDs, and receiving emails as members of religious email subscriptions. For example, Richard (69, Evangelical) said that he used the internet to do research on religious topics: "If I want to know about King Solomon or the first temple or something you just Google it and you get all kinds of information. Also…raystedman.org has got a very strong website with all kinds of his teachings that are recorded there both audio and PDF format." Camille (66, AME) uses religious apps on her phone and tablet. She said, "I bought it from the App Store. I bought the book at the Bible book store. But it's easier for me to read it on my tablet or my phone, so I bought that." Similarly, Marian (78, Episcopalian) is a member of an email subscription: "I receive a daily meditation e-mail online every morning written by Richard Rohr, a Catholic priest, Franciscan, and I am gaining a broader understanding through some of his writings that lead me to this sense of that God is within us." It is apparent from these quotes that technology usage potentially furthers our participants' engagement with religion and spirituality.

Furthermore, The response of Jeanette (73, Evangelical) suggests the seamless way in which technology has become a part of many seniors' spiritual and religious lives: "I get up at 5 o'clock in the morning, I make my coffee, I sit down, I plan my day… you know, now it's my calendar on my phone, and my Bible, and my Bible study is all on my phone and my Kindle." The older adults in the sample used many different types of technology for a variety of religious and spiritual usages, defying the popular belief that older adults do not engage with it as much as younger generations, if at all. A full list of the 15 uses can be found in Table 2.

1. Reading the Bible via app	2. Praying or meditation via guided app
3. Performing internet research on religious topics	4. Reading online devotionals
5. Watching sermons via streaming or DVD	6. Keeping up with church events via website or email
7. Subscribing to religious emails	8. Checking in on other church members via Facebook or phone
9. Belonging to religious Facebook groups	10. Playing Bible Trivia apps
11. Taking online classes related to religion	12. Making prayer conference calls
13. Listening to religious podcasts	14. Streaming religious music
15. Listening to the Bible via app	

Table 2. Religious Uses of Technology

Compensation

In analyzing the statements by our participants, it became clear that older adults are using technology in ways both to compensate for the challenges of aging and to capitalize on the unique opportunities retirement affords—often simultaneously. Here we discuss how older adults use technology to compensate for physical challenges in order to maintain aspects of their religious and spiritual practices.

Compensating for Physical Challenges

Perhaps the most obvious compensations technology provided older adults relate to physical challenges. Several participants commented that failing eyesight made it difficult to read scripture in hard copy or other religious materials, and technology provided them with a few different solutions. Kindles, smartphone apps, and other forms of e-readers allow seniors to increase the font size of any text. Audiobooks and text-to-speech apps provide the same benefits, even for individuals who are nearly blind. When asked whether he read the Bible on his own, even Caleb, the individual who claimed he was from "an older generation" and thus did not use computers, admitted that audiobooks are also helpful to those who have a tendency to misplace reading glasses: "I'll listen to it, because my eyes are getting bad and I always forget my glasses. Even with the Bible on the phone, if I don't have my glasses, I still can't read it." Without technologies, these older adults may not have been able to participate in religious and spiritual activities that they find important.

Compensating for Emotional Challenges

Perhaps even more importantly, our participants also spoke of ways in which technology can compensate for the emotional challenges and social isolation aging can cause. They described ways in which technology enables individuals who are homebound, hospitalized, or otherwise incapable of driving to maintain relationships and remain active members of their faith communities. Some of these individuals described informal check-ins with other members of their congregation, and the members of one particular AME church with a large population of seniors described a formally organized system that had a large impact on three of our participants. Ellen (76, AME) describes,

> We have the sick and shut-in list that we all call, everybody on it—or most people on it, some people are non-responsive, so you can't talk to them. But we call them on a regular basis…People call and want to know, 'Are you okay? I haven't seen you. We didn't see you Sunday. What happened? Do you need a ride?'

A member of a different AME church described "conference call prayers" that allow seniors to pray communally without needing to leave their own homes. Kevin (88, Evangelical) said, "Instead of having a conference call, have conference prayer…people can be in the confines of their home at six o'clock in the morning. They don't have to get on the freeway or drive." Technologies like conference calls can reduce social isolation by fostering community involvement even when an individual remains in their home or the hospital.

More common, ten participants described how live-streamed or recorded services are brought to hospitalized or homebound seniors. Some of our participants explained that their churches explicitly frame the practice as a form of inclusion and outreach to older seniors. Nia (89, AME) joyously recounted an interaction with a friend who has used it to stay connected and informed:

> So many people can't get to church, but if they have a computer, there the services are. In fact, one member was absent and I got up and said something, maybe it was about my birthday, when we recognize birthdays of that month… and I said, 'Oh Mr. Houston, I didn't see you Sunday, are you okay?' He said, 'Yes, but I saw you.' He saw me on streaming, so that's one nice thing I like about [it].

An Evangelical named Ken was unique in describing a "viral" Facebook post requesting prayers. He credits it for a miraculous healing after having a stroke:

> And then my whole family was down in the waiting room. My one daughter put it out on Facebook, and then that kind of went viral everywhere. So there was literally thousands of people praying. Long story short, after about four hours I had fallen asleep when I woke up I could speak and I told my wife, I said, 'I think I'm going to be okay.' And, boom, I got checked out of the hospital the next day.

Another unique compensatory use of technology was described by James, a 74-year-old Evangelical whose story can help to illustrate the many benefits technology provides for seniors. James was raised in a non-religious, ethnically Chinese home, and was first exposed to Christianity while attending boarding school in Sydney, Australia. In the past he has struggled to reconcile his faith with his training as a scientist, but he has since come to believe, "in a *historic* Christian faith, that he [Jesus] is God become man to redeem us back to himself. That he did die, he did rise from the dead and is in heaven today advocating for me and you."

Like many older adults, James and his wife recently made the transition from independent living to a retirement community several states away from their former home. The move brought a reprieve from harsh winter weather but also the challenge of being separated from their former faith community. In the two years since the move James has become highly involved in his local evangelical church, but Skype video-chats have also helped him to maintain a connection with the friends and loved ones he left behind. Every Tuesday morning James participates in a Bible study that takes place 1,500 miles away back in Chicago. James explained, "They meet in a conference room that's set up for video conferencing, so they see me on a big screen. I see them on my laptop." Because of technology, James can maintain spiritually-meaningful relationships across time and space.

Retirement has also bought James a sudden increase in available time, and technology helps James capitalizes on it for more than golf and other leisure activities. He can now devote far more time to deepening his spiritual life. He said,

> I get up at 6:15 in the morning, make myself a cup of coffee, assemble a handful of nuts, and I turn on my computer to Logos bible software and I will spend an hour reading, studying, contemplating, making notes, praying. So now this has become a much more regular practice at that hour. In the past when I was much more involved in working I would have to find different times during the day or the evening. But I find this much more satisfying. I think that's the biggest change in my practice.

The software James refers to here, Logos, has come to replace a physical Bible and Biblical commentaries for him. James notes that retirement communities have far less storage space than single family homes and appreciates the way in which this software helps him cut down on the volume of physical books and papers for which he needs to find room. Available on both his phone and computer, Logos allows James to not only pray or meditate but also spend his time diving deeper into Biblical history and scriptural interpretation. He describes,

> It's set up so that when I turn it on I'll see the scripture passage that I've been reading in Revelations, and if I put my pointer on a particular word it will bring up the meaning of the word, it'll give me the Greek word for that English word and tell me some background about the Greek meaning. On the other side of the screen there will be tools that allow me to make notes. I can write a note that records my own thoughts as I type it in, and there will be an asterisk placed with that particular verse so whenever sometime in the future I come back and I put my pointer on that asterisk it brings the note up, whether it's on my laptop where I recorded it or on my phone or on my iPad I see the same note. It's a very powerful tool for those who want to dig a little deeper.

As James mentions, his use of LOGOS and technology in general provoke insight and aid him in deepening his religious faith.

Capitalization

While older adults used technologies to compensate for challenges such that they could maintain their devotional practices or connections to church communities, seniors like James also used technologies to capitalize on the ways that older adulthood afforded opportunities for religious and spiritual development. Consequently, older adults in our sample used technologies for religious and spiritual purposes in ways that were new to them. Older adults used technology to capitalize on opportunities for

further spiritual and religious education as well as deeper spiritual engagement.

The combination that James describes—of using technology to capitalize on the increased availability of time in retirement by both learning more about his religion and participating in spiritual practices such as prayer and meditation—was very common among our participants. Greater free time associated with retirement allowed many to capitalize on longstanding desires to learn more about denominational history, scriptural exegesis, interfaith comparison, and other topics of religious significance. As Kevin (88, AME) explained, "This internet is such a wonderful boon for research and finding out information, getting information out there…now you've got the time. You've got more time than these young people that's always on these instruments." Kevin directly attributes time as the reason why he now uses the internet.

Similar sentiments were expressed by Daniel, a 66-year-old Methodist Sunday school superintendent. Daniel is a fan of the Christian apologist Ravi Zacharias and his "Let My People Think" ministry. As explained by Daniel, Zacharias inspires him "to do more meditation on the word and studying the word, and understanding what this says, not only just the cursory read, but to get down into and understand really what is being said in scripture" and he encourages others to do the same. Daniel's daughters recently bought him a Bluetooth speaker and showed him how to stream religious content via smartphone app. As a result, he says, "I think I've grown tremendously because of my study time I have now, my listening time." Additional time in old age paired with access to technology are key reasons why Daniel has been able to further his religious study.

Almost half of the older adults who reported that they use technology for religious purposes utilized it to conduct research and deepen their understanding of religious topics outside of formal classes or seminars. When seniors stumble across particularly thorny or especially meaningful passages, apps and internet searches bring them instant guidance. Chloe (67, AME) said, "When I'm studying the Bible, and I want to delve into something a little deeper, I'll often go on the internet and I can do some research…get some different opinions on interpretations or even how to pronounce a word, those types of things." Camille, a 66-year-old Evangelical, said her smartphone is useful: "I have a lot of Bible stuff and I like to do a lot of research." She even has a Bible Trivia app to help her gain and retain Biblical knowledge.

A few of our participants described ways in which the internet helps them stay informed about current events and political causes related to their religious convictions. Marilyn (78), a Catholic who stands vigil outside of Planned Parenthood offices, receives several Pro-Life newsletters in her email. Four of our Jewish congregants—and a lone Episcopalian—mentioned that they regularly use the internet to stay informed about the political situation in Israel. Herb (78, Conservative Jewish) became passionate when he spoke about his habit of reading online news about Israel, "I read a lot on the internet about Israel…the politics of Israel, the religious movements in Israel...like women are not allowed to pray at the Wall. Even though the orthodox are a real minority in Israel they dominate the political in Israel, which is a real source of irritation."

Furthermore, five of our Episcopal participants—from multiple congregations—are enrolled in the denomination's four-year Education for Ministry (EFM) program intended to provide lay church members with a theological education. Participants noted that the Internet provides a quick and easy way to prepare for the seminar or dive deeper into topics that they found intriguing. For example, Linda (72, Episcopalian) said, "I've gone to the internet many times for EFM study to look up some specific thing and, you know the internet, you look this up, then you get this whole thing, oh, that looks interesting, that looks interesting." Helen (70, Episcopalian) also commented, "I love to just Google stuff that I'm interested in finding out about. So, you know, I do that, and that's interesting. In the Education for Ministry class if we

had to read like the book of Galatians or something you just look it up online and Wikipedia will give you a lovely little summary."

Debbie, a retired speech and language therapist who still occasionally substitutes in special education classes, is another EFM participant whose story can help illustrate the importance of technology to older adults. Even though she was born into a religious family, Debbie left religion in her adolescence and returned to the church only after a painful divorce. She attends two Sunday services, teaches Sunday school, feeds families at a local transition house, and serves as a lay reader. Despite this heavy involvement with her church, Debbie described herself as "more spiritual than religious" and said, "I'm finding as I get older I'm much more secure with who I am, and it's okay to be me and a little different than the mainstream."

Meditation is central to her religious practice, and she is careful to differentiate it from prayer. She sees prayer as conversational and involving specific requests but notes that when she meditates she is "not asking for anything except for just to be in the presence of the Holy Spirit." Music is of great importance to Debbie, and she stated, "I have some of my very best feelings of closeness with God when I'm listening to meditative music."

Debbie finds the music that she listens to while meditating by using the Pandora app on her smartphone: "I just plug into that and it gives you this beautiful meditation." She also pointed out that the research she does online in preparation for her EFM seminars often brings new insight and connection to the hymns that she sings in church every week. She explained, "I'm very much into hymns and spiritual music, and so I will go look up stuff like that, and then you see, oh, this [line] came from Matthew or this came from whatever and I hadn't really given that any thought before, you know. So, yeah, I'm making connections there."

When asked more broadly about her religious uses of technology she exclaimed, "There's so much!" She continued, "I read a lot of Richard Rohr's things and I get his weekly newsletter. That is also at the tip of the computer. You just punch a button and there you go." Debbie's use of Rohr's writings, along with her use of music streaming, point towards an often overlooked benefit technology has for many older adults: the direct facilitation of spiritual or religious experiences.

Spiritual Engagement

For participants from Catholic or mainline Protestant denominations, this religious facilitation took the form of app and website substitutes for traditional prayer books and formal liturgical materials. Marilyn (78, Catholic) explained, "There's a morning offering prayer to start the day to dedicate it to God, to dedicate my thoughts, words and actions, everything to God's glory. It's on the internet." Convenience was often cited as a benefit over traditional paper versions of these same materials. Walter (79), another Catholic, elaborated, "Both my morning/evening prayers are part of what's called a Liturgy of the Hour and I can get that as books. I have four volumes of books that have this, but it turned out it's more convenient I can get it on the internet so I typically use it on my iPad so I'm using my iPad for my morning and evening prayers." Technology offered participants easy access to spiritually-focused readings and scripture and facilitated the incorporation of these readings into their daily routines.

Twelve of our senior participants reported that, like Debbie, they subscribe to daily or weekly devotional emails sent out by religious institutions or spiritual leaders. Sometimes they described these emails as meaningful ways to begin or conclude the day, while other times they were framed as a resource that could be drawn on whenever a moment of respite or reflection was needed. Carol (77, Catholic)

receives daily devotionals from her diocesan Bishop. Chloe (67, AME) receives "positive" daily emails from Joel Osteen. Richard Rohr, the theologian mentioned by Debbie, was especially popular. Charlotte (68, Methodist) describes,

> I'm subscribed to three daily meditations. One is *Sight Psalms* which is photographic, very short, and I actually am a contributor to that. And then one called *Inward/Outward,* a very short reading every day, and it's usually a poem of some sort. It's not biblical. It's pretty, I would call it, mystical, but that might have too many meanings. And then the one that has really been helpful to me is Richard Rohr. He has a daily piece that is fairly concise and short. He's a wonderfully concise writer.

The name of Rohr's devotional subscription service—Constant Contact—is an apt description of what he helps provide for those whom he honorifically calls "Elders."

Furthermore, one of our participants (Jasmine, 75, Evangelical) is herself the author of daily devotionals that she publishes on her personal website and distributes via email "to people all over the United States." Another participant from her church mentioned them as being a helpful way to start her day. Janet (72, Episcopalian) also found helpful reflections on the internet directly from individuals that she knows, "I have a number of contacts on Facebook that send either sort of a spiritual thought or a passage from the Bible. It doesn't follow liturgy the way the Book of Common Prayer does, but nevertheless there's always something there. So several times a day, I look at things like that and consider how they might apply." For participants like Janet, technology provided a means to engage with others in their social networks about spiritual and religious topics.

Five of our participants, including Debbie, indicated that they use streaming services to access hymns, Gospel music, or calming music that they play while praying or meditating. Other older adults indicated that technological access to spiritual music provided them with a way of turning ordinary activities into acts of devotion or meditation. Daniel (66, Methodist) volunteers to sort recycling through his church, which he considers to be a sort of prayer, and uses his phone to listen to Christian music as he does so. Jasmin (75, Evangelical) listens to *The Messiah* while driving and said, "It occurred to me the other day. It keeps me calm while I'm driving. Everybody else is running around and acting crazy." Finally, Irene (66, Baptist) revealed, "Well, when I'm writing bills I will turn on hymns.net and just play hymns which is lovely…Music is sometimes very, very comforting."

Tyrone, a 67 year old former MTA bus driver who describes himself as "retired, but working," provides a helpful illustration of the way in which this sort of technology can facilitate spiritual practices in even the most reluctant of adopters. In his youth, Tyrone attended a historically black college for a few years, but never graduated. Now, in addition to caring for his ailing wife, Tyrone works as an usher at a sports arena ("I get to walk up and down the steps, get my steps in, my exercise") and as a bus driver for a local senior center ("I take them all to breakfast. I take them to Walmart. Just take them different places."). He attends his Pentecostal church four times a week and is heavily involved in several ministries. He serves as a Deacon, welcomes visitors with the hospitality team, feeds the homeless with the Outreach Ministry, and teaches children's church. When questioned about his busy schedule Tyrone said, "My job is to be a light."

Tyrone is grateful for his job driving the bus at the senior center because he is able to utilize his phone to play gospel music, something he longed for, but was unable to do when he drove city buses: "when I was driving the bus, I always wanted—because people would try to get on and play their other secular music, or worldly music. And I said, 'Man, I sure would love a job that I can play the music that I

love' and here I am." He also takes advantage of the time he spends driving the bus by listening to an audiobook version of the Bible on his smart phone: "I have my Bible app on my phone and I have my little Bluetooth in my ear listening to the thing."

However, Tyrone admitted that he was a reluctant adopter. When the researcher points out his impressive utilization of Bluetooth headphones and religious apps he responded, "Yeah, technology. I didn't like it, but see…" Later he added,

> Yeah, you got to do what makes you successful in this walk. Just like your career or your skill, you just can't sit down and don't read. You got to stay on top of things. If you don't, you're going to fall behind. I'm constantly listening—like I was out in the backyard, cleaning up this morning, and I had my little box on. Just keeping my mind on Him. That's the key to victory in this life. You got to stay committed.

Tyrone thinks that his peers all too often fail to stay committed and continue growing in this way. While he celebrates the wisdom and experience that comes with age, he suggests that older adults sometimes become stagnant and are content to leave learning—and new technology—to the young. As he says,

> Because when you're older, most Christians just get comfortable because they have so much knowledge over the years. They don't recognize that you still got to stay busy. You still got to fight, you know? And you still have to allow your mind to expand in the word of God. And they just get settled in tradition, the old ways. But the young people, they're getting exposed to the depthness of God. And then with technology, they have so much that they can see and grasp.

Tyrone and other participants exhibited attitudes focused on religious and spiritual growth and saw older adulthood as something more than a fight against physical or mental decline. The ways that participants used technology showed that older adulthood can present new opportunities for expanded religious and spiritual growth, as reflected in participants' use of technology to educate themselves more fully on their religious heritage or beliefs and facilitate deeper spiritual engagement than what they had previously experienced as younger adults.

Discussion and Implications

In this research we have explored how older adults use information and communication technologies in their spiritual and religious lives. How widespread is their use? What kinds of ICTs do they use, and why? Contrary to stereotypes of older adults being technophobic, the overwhelming majority of the older adults in our sample, across every denomination, used ICTs in their everyday lives—particularly to assist in their spiritual and religious devotion. Seniors are certainly willing and capable of using technology, especially if given explicit guidance. Not only do older adults use technology to compensate for age-related changes, they also use technology to capitalize on new opportunities in later life and purposefully facilitate growth in their religious and spiritual lives. We coded 15 distinct ways that participants were using technology to compensate for physical and emotional challenges (such as decreased mobility, poor eyesight, or social isolation), to capitalize on the increased availability of time to deepen their religious education (via apps or websites), and to directly facilitate spiritual experiences (including emailed devotionals).

Our findings add to the growing body of research on the relationship between technology and the ever-expanding older population (Micera, Bonato, and Tamura 2008). Our findings support previous

research by Loges and Jung (2001) that both older and younger populations see the internet as important in their lives, and Mitzner *et al.*'s (2010) study that older adults' positive attitudes about digital technologies outnumbered their negative attitudes. In highlighting the lived experiences of older adults, our research shows that their technology use is not only a solution to health-related concerns (Plaza *et al*. 2011). Instead, the seniors in our study draw on technology as a key part of their religious and spiritual development as well as a means to stay connected with their faith communities. Thus, our research also supports Bowen's (2012) observation that the discourse surrounding older adults and technology needs to shift and include the ways in which technology can be used as a tool for better social and emotional well-being as well as a health and medical tool.

At the individual level, our findings extend the application of social-psychological theories in gerontology to the realm of older adults' technology use. For example, Selective Optimization with Compensation (SOC) theory (Baltes and Baltes 1990) accounts for the ways older adults "cope with age-related losses to manage adaptive (successful) development in later life" (Bengtson and DeLiema 2016, 38). This theory highlights how aging individuals use strategies of selection, optimization, and compensation to maximize increases in resources to minimize the losses they encounter through the aging process. The data in this study illustrate how this theory can apply to older adults' use of technology for religious and spiritual purposes. Older individuals in this study are optimizing use of technology to compensate for age related conditions, such as loss of mobility, and thus allowing them to continue to age successfully (Schroots 1996). Future research in this area might further examine older adults' use of technology to cope with changes that would otherwise inhibit their religious and spiritual development.

Similarly, Carstensen's (1992) theory of Socioemotional Selectivity (SES) posits that as older adults become increasingly aware of the limited time remaining in their lives, they look to enhance meaningful relationships and affiliations. Older adults can adopt technologies and use them to selectively focus and augment their spiritual and belief systems. Besides using technology for religious and spiritual purposes, participants in this study mentioned using technology to maintain contact and keep in touch with those important to them—such as "prayer partners" and bible study members. According to SES theory, as individuals age, their interest in material things frequently declines while interests in meaningful relationships increases as they "selectively devote more effort to emotion regulation and bonding with close friends and family than to investing in future relationships and rewards" (Bengtson and DeLiema 2016, 39). Our findings support this notion. Rather than replacing close relationships or communities, older adults used technology to foster existing bonds that provided them with religious and spiritual support. Future research might examine if and how seniors' use of technology might change even throughout older adulthood.

The findings of this study also have important implications for practitioners involved in serving older individuals. Clergy have reported that they feel forced to choose between either serving youths and young families or addressing the needs of seniors, especially in regards to incorporating technology into church services (Bengtson, Endacott, and Kang 2017). However, our findings suggest that utilizing technology and serving older adults are not mutually exclusive. Energy might be best spent assisting older adults in utilizing their technological devices through educational workshops or intergenerational programs. Participants from several of the churches represented in our sample discussed successful programs where youth and young adults teach seniors to use different pieces of technology. One such participant described his church's "Selfie Sundays" where millennials are paired with individuals over 50 and teach them to use social media. Another participant, Ellen (76), reflected upon the importance of a similar program at her AME church:

One of the other things that I think is critical—and people may not think it's a big ministry

but it is—we have a cell phone ministry that we have it where the young people are teaching the older people how to take selfies, how to use their cell phone...we're getting them to be more comfortable with technology and I think that helps.

These formal programs as well as more informal intergenerational encounters, such as getting help with navigating the internet from a grandchild, show that technology use can foster church communities and connections. In practice, older adults are enthusiastic consumers of technology and should not be overlooked as a formidable potential market segment for technology developers.

Limitations and Areas for Future Research

There are important limitations to this study that should be recognized. The sampling strategy resulted in an unusual group of seniors: older adults who were nominated by pastors, priests, and rabbis and thus who were very much engaged already in spiritual and religious practices. Most of the individuals in our sample were older (average age 77) and were also quite educated (16 years) compared to the average for their cohort. Moreover, the sample is from just one area, southern California, and results might be different for older adults in regions with differing demographics or sociocultural contexts. Such older adults may have different needs than those included in our sample and likely face a different set of barriers to technology use and, consequently, may use technology in different ways. For example, older adults who live in regions with less access to wireless internet or cell service might not own personal technological devices and may consequently use them in different contexts (for example, using computers in public libraries), which may in turn affect how these technologies are used for capitalization or compensation purposes. Thus, caution should be exercised when extrapolating the results of this study to other older populations.

This study also presents several important areas for future research. First, further research is needed to explore how more diverse groups of older people (including those from other faith traditions and less populated areas), experience the use of ICTs for religious and spiritual purposes. It is also possible that gender is a component of ICT usage and more research is necessary to explore this aspect. Second, the nature of older adults' media literacy in regards to the use of technology for religious and spiritual purposes should be investigated. Media literacy has been dubbed the new "digital divide" (Müller, Sancho, and Hernández 2009). Though concerns about media literacy often center on young people, particularly adolescents (see Flanagin and Metzger 2010), older adults may also need to overcome barriers to not only attain access to information, but to interpret and evaluate it skillfully. In light of the plethora of religious and spiritual information available on the internet, understanding how older adults evaluate religious and spiritual information they find online may shed new light into studies of credibility assessment and equip practitioners to help older adults navigate technology for religious and spiritual purposes.

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