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"Who over 65 is online?" Older adults' dispositions toward information communication technology

Kerryellen G. Vroman [a,*], Sajay Arthanat [a], Catherine Lysack [b]

[a] Department of Occupational Therapy, College of Health and Human Services, University of New Hampshire, United States
[b] Institute of Gerontology, Department of Health Care Sciences, Wayne State University, United States

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ABSTRACT

This study is part of a research project that examines patterns of information communication technology (ICT) use, social participation, and health of older adults (age 65+) residing in the New England region. Specifically, we surveyed the breadth of ICT use, technology experiences, and socio-personal characteristics of 198 older adults and analyzed the dispositional correlates of ICT adoption. Results showed that majority of participants used ICT to maintain family and social connections and to access information on health and routine activities. Those aged 65–70 with higher education and/or living with a spouse/partner were more likely to use ICT. Key relationships between ICT use and perspectives on technology were found. Higher ICT use was associated with self-perceived socio-personal characteristics such as being "satisfied with activities", "persevering", "physically and emotionally independent" and having a "positive outlook". Whereas, the majority of non-users reported that their activities did not change across time and that they felt "intimidated" and "anxious" with technology. The performance of ICT-based activities and/or the desire to perform them were significantly associated with the perceived importance of the activities. The older population's age, education, attitudes, and personalities influence how they approach ICT. We propose a community-centered socio-ecological model to factor in these dispositional characteristics in future ICT training programs.

1. Introduction

Older adults are an emerging but important group of information communication technology (ICT) consumers. As age-related conditions effect social relations and functional abilities, it is reasoned that ICT will facilitate older adults' access to health services, social connectivity with family and friends and enhance involvement in leisure and their completion of routine activities (Boot et al., 2013). However, before investing resources to make ICT more accessible and useable for older adults we need to fully examine the complex patterns involved in technology adoption and its use among this population. In existing literature authors call for further investigation into the patterns of ICT use among older adults. They stress studying "the independent and synergistic influences ... on older adults learning and use of ICT" is important (Xie, 2003, p. 299).

The purpose of the current research was to identify the perceived ICT needs, uses, and dispositional attributes of older adults to create an ICT consumption profile, which would inform decision-making regarding the feasibility of ICT services for the older population. While the literature has offered a broad record of ICT use by older adults, the lens used in the current study provides a detailed profile of the older ICT consumer. In doing so, the data contributes depth and detail of the documentation of ICT attitudes and use of older adults. This work is a precursor to examining the social and health benefits of ICT for community-centered aging and the provision of ICT to remediate changes in functional status and maintain quality of life.

1.1. Information communication technology and the older adult

Older adults' adoption of new technologies has consistently lagged to that of the younger generation (Czaja et al., 2006; Zickuhr & Madden, 2012). As younger consumers become increasingly facile with multiple modes of ICT, whether it be through their pervasive adoption of mobile devices, touch tablets or social networking applications, older adults remain at the opposite end of the digital divide (Barnard, Bradley, Hodsgon, & Lloyd, 2013; Charness & Boot, 2009; Czaja et al., 2006). Pervasive idiomatic thinking portrays older adults as lacking interest, enthusiasm, familiarity and exposure to ICT. This might be viewed as plausible given the majority of older adults' childhood, education, and

* Corresponding author. Tel.: +1 603 862 4932; fax: +1 603 862 0778.

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workforce experience was prior to the ubiquitous presence of ICT and there is preliminary evidence to support these assumptions.

Until recently the advent and rapid development of microprocessors, and Internet and web-based programs were primarily targeted and benefitted younger generations and in numerous ways overlooked or underestimated the potential of the older consumer. In 2012 Pew Research Center, a nonprofit think tank's Internet and America Life initiative revealed significant gains in older adults use of ICT. After minimal growth for several years 70% of adults aged 65 years or older own some type of a mobile phone and 53% reported using the Internet. The use of the Internet decreased with age with only 34% of older adults aged 75+ reporting Internet use (Zickuhr & Madden, 2012). In comparison, 82% of adults 18 years and above used the Internet. Older adults are the least likely to have computers at home (Cotton, Anderson, & McCullough, 2013) and the least likely to rely on ICT for social networking (Zickuhr & Madden, 2012).

Researchers cite age-related declines in motor, sensory, and cognitive skills as factors associated with older adults' limited ICT use (Rogers, Stronge, & Fisk, 2005). However, other researchers contradict this finding and argue the principal barrier to ICT adoption to be not related to a skill-deficit, but rather due to negative attitudes stemming from fear, anxiety, and a lack of motivation and interest, (Heinz, 2013; Lee, Chien, & Hewitt, 2011; Marquié, Jourdan-Boddaert, & Huet, 2002), all of which are modifiable barriers. Anxiety associated with ICT leads to self-imposed barriers and low self-efficacy in ICT skills, e.g., learning to use ICT to be "too difficult (Marquié et al., 2002; Turner, Turner, & Van DeWalle, 2007). Interestingly, Mitzner et al. (2010) found that the difference between older and younger users was not in their actual knowledge about computer use but rather in the confidence and the tendency of older adults to underestimate their knowledge and abilities.

The apparent lack of awareness of the perceived benefits of ICT coupled with deep-seeded hesitations about its social value is a significant factor in older adults' willingness to purchase, invest time in and gain mastery over its use. Older adults' beliefs (or misperceptions) about ICT for social networking purposes are especially negative. Lehtinen, Näsänen, and Sarvas (2009) found that older adults view Internet-based social networking as an unwelcoming and superficial medium to initiate social interactions and non-conducive to sustaining long-term relationships. There is the strong general mistrust of ICT and high levels of concern that ICT social networking will diminish or even replace their valued face-to-face human interactions (Heinz, 2013). However, when older adults successfully use online social networking, studies show that concerns diminish and connectedness with others becomes a frequently cited benefit (Gatto & Tak, 2008). Fausset, Harley, Farmer, and Fain (2013) found that the older adults in their sample who used ICT reported benefits in terms of social connections and community living, while non-users stated they were only likely to adopt ICT if their safety concerns about it were resolved, when they receive support from family for its adoption, and most of all when its "value and personal relevance" are made clear. Hence, when older adults do recognize a personally relevant usefulness of ICT, it is strongly associated with adoption. As evidence, among the 53% older adults Internet users identified in the Pew Center Study, 70% were daily users suggesting that once older adults learn to use the ICT, they will make regular use of it (Woodward et al., 2011; Zickuhr & Madden, 2012). Similarly, Melenhorst, Rogers, and Bouwhuis (2006) comparing users and non-users of email and cell phones found older consumers' experiences and attitudes toward ICT were driven by the knowledge of its benefits, and not the effort or skill needed to use the technology.

Despite the evidence of growth in the use of ICT among older adults, the adoption of technology remains limited in the older population (Heart & Kalderon, 2013). While there is a growing body of literature identifying older adults as ICT consumers, what is lacking is the detail. Knowledge pertaining to the nature and breadth of ICT-based activities that older adults participate in among the array of possibilities and the ones they perceive as most relevant and meaningful has not been comprehensively examined. We currently lack the fine grain insights into the specific dispositional attributes, fears, and what is considered "valuable and relevant". These factors limit adoption and exploration of ICT and must be addressed in order to overcome perceived barriers to motivate ICT use among the older population. Only with specific knowledge of the patterns or use and barriers will we be able to move forward to increase the belief among older adults that ICT will significantly contribute to their quality of life and have adequate data to develop effective ICT training programs targeting older adults needs and interests.

1.2. Study purpose

The model of this study is underpinned by the dual constructs of *perceived usefulness* and *perceived use* in systems use (Davis, 1989). These constructs purport that consumers' successful adoption of ICT is motivated by their recognition of the perceived usefulness of a technology in parallel with the perceived ease with which it can be used. In the case of older adults, it is critical to explore specific predispositions, meaning and motivations associated with ICT use with an underlying implication to confirm whether they supersede the stated barriers and negative attitudes in adoption.

The paper reports findings from a comprehensive survey of ICT use in a sample of $n = 198$ community-based adults age 65+ residing in New England. The survey is part of a larger ongoing project funded by University of New Hampshire's Sponsored Programs Administration to examine patterns of ICT use and their association with social participation and physical health and psychosocial variables. The project uniquely focused on the region's rural and small town population with the premise that access and opportunities for ICT use may be limited, and likewise, that the ensuing benefits (i.e., expanded social participation and access to useful health information) may be reduced. The overarching goal of the study presented here is to identify the factors associated with successful adoption and use of ICT in this population and to delineate valued activities and benefits that may promote its sustainable use.

Based on prior research on older adults' psychosocial dispositions for ICT adoption, we hypothesize that the strongest correlates of ICT use will be: (1) higher education (possibly supported by past experience and domain knowledge); (2) live alone status or single/separated/widowed (i.e., highly motivated to seek new and maintain existing pathways to social connections); (3) prior positive experiences with technology; and (4) positive socio-emotional characteristics and dispositional traits (i.e., including curiosity, openness to new things including technology).

2. Methods

2.1. Procedure

Survey methodology was employed to address the study hypotheses. Survey design not only allows researchers to examine trends within a population, but also to identify characteristics and frequency of attitudes and practices within subsets of the population and to draw relationships between involved variables (Rallis & Rossman, 2012). The study protocol and survey items were reviewed and approved by the University of New Hampshire's (UNH) Institutional Review Board for the Protection of Human Subjects in Research. The sample of older residents in the New England