Social Media Gerontology: Understanding Social Media Usage among a Unique and Expanding Community of Users

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Abstract

The percentage of older adults using social media has dramatically increased in recent years, yet comparatively little research has been done to understand this unique community of users. In this paper, we first compare characteristics of Facebook users to non-users among adults over the age of 50. Second, we explore several characteristics of active Facebook users among older adults. Third, we build on previous research to investigate the differential impact of traditional versus social media-mediated communication activities among older adults, and assess its relationship with social satisfaction. Finally, we examine the specific relationship between older adults' Facebook communication habits and their attitudes regarding social satisfaction, loneliness and social isolation. Controlling for factors such as age, gender, ethnicity, socioeconomic status (education and income), and marital status, we find that directed communications (as opposed to broadcast communications and passive consumption of content) is significantly correlated with feelings of social satisfaction among this distinct population.

1. Introduction

As the growth rate of the United States population declines, the growth rate of the older adult segment of the population has dramatically increased [1]. Moreover, the number of senior adults[1] who are using social media technology is also rapidly increasing [2]. At the same time, numerous studies are demonstrating the general benefits of social connectedness to the health and well-being of older adults [3]–[8]. With this in mind, it seems worthwhile to understand the role that social media technology plays in supporting such connectedness. To this end, we recruited 268 participants age 50 and over to complete a survey to investigate (1) the characteristics distinguishing social media users from non-users among older adults, (2) common activities of those who self-identified as active social networking site users, and (3) relationships between older adults' communication habits – both online and offline – and their outlooks regarding social satisfaction. Using a mixed qualitative/quantitative approach, we find that age plays a large role in determining the likelihood of Facebook use, and that lack of access, perceived security and privacy issues, and perceived complexity of the technology each contribute to why some seniors choose *not* to use social media applications. We also found a significant relationship between age and network size - older seniors have distinctly smaller social networks than younger seniors.

The Patient Reported Outcome Measurement Information System (PROMIS) is a well-validated 8-item instrument to assess satisfaction with social roles and activities [9]. Using this as a dependent measure, we investigate whether there is a difference between using *traditional* communication channels (e.g., face-to-face, or telephone) and social media-based communication on seniors' social satisfaction. We also examine the impact that certain social networking site (SNS) specific activities like directed communications, broadcast communications, and passive consumption [10] have on social satisfaction. We find that social media does not replace traditional channels for older adults, but complements them with a different kind of interaction opportunity. Specifically, older adults engaging in directed communications via SNS are more satisfied with their roles and activities within their social networks.

Whereas numerous previous studies explore how and why *teens* and *younger adults* use SNS, very little research has examined SNS use among older adults. Considering the prospective benefits of increased social connectedness to the health and well-being of this unique (and growing) population, studies like this are critical to understanding social media technology usage among older adults, and the impact of such technology on important elements of their lives.

[1] Much of the literature related to human factors and aging distinguishes between *older* adults (age 50 to 64) and *senior* adults (age 65 and over). However, for the purpose of the work presented here, we use the terms interchangeably to refer to adults over the age of 50.

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2. Background and Related Work

The growth rate for the United States population is declining overall, but those for the older adult segments are increasing. For example, the number of people younger than 18 dropped by nearly 200,000 between 2010 and 2011, while people age 65 and older increased by close to 920,000 [1]. In fact, for the decade between 2000 and 2010, the Census Bureau found that people over 65 increased at a faster rate (15.1%), than the total U.S. population (9.7%), and adults between 46-64 (the so called "Baby Boom" population) have seen similar rapid growth [1].

As the number of older adults reaches record levels, it becomes increasingly important to understand the implications that an aging population has on aspects of community and society, including family and social network characteristics. Previous studies examining social satisfaction and well-being among older adults have illustrated a need for strong social ties [3]–[5]. Research has shown that as adults progress through retirement and other life changing events – such as the death of a spouse – they are likely to become depressed [5]. Maintaining strong social connectedness with friends and family has been shown to decrease symptoms of depression [6], [7], stimulate interest in daily activities [8] and improve overall life satisfaction [11].

Given the general benefits to the health and well-being of older adults that accompany stronger social connectedness, it seems worthwhile to understand the role that social media technology plays in supporting such connectedness. It is also noteworthy that the percentage of older adults who use social media has dramatically increased. According to the Pew Research Center's nationally representative Internet and American Life Project, respondents age 65 and older who use social media has increased from one percent in 2006 to 38 percent by 2012 [2].

Older adults are quickly becoming more familiar with social networking technologies, but a lack of research in the uses and activities related to social networking among older adults is apparent. The capacity with which this unique population interacts with social media is diverse. However, many social networking sites tend to target a specific audience such as teens, parents, college students, singles, and those with certain political or religious affiliations. As a result, many social media applications are geared toward younger generations, catering to their needs and expectations, while an auspicious opportunity to gain access to a dramatically increasing segment of the general population is lost. Herein lies another reason for understanding how and why older adults use (and don't use) social media – such information can be extremely valuable for helping to shape the development of future social media applications designed to address the needs, preferences, and concerns of this community of users.

In 2011, the social networking site Facebook reported having over 500 million users. Today, that number has grown to over one billion users worldwide[2]. The general pervasiveness of SNS technology, along with the accelerated growth of SNS use by senior adults age 50 and over, motivates the selection of Facebook as the platform for our study. We use this opportunity to learn more about what interests older adults within the realm of social media, their concerns, and how we, as researchers, can find a medium that fits with the expectations and needs of this demographic.

2.1. Age and Motives for Using Social Media

Prior work shows that undergraduates, typically age 18 to 24, use Facebook out of "habit" and "time-passing" [12]. Similarly, Valentine [13] explores the motivations for using Facebook among adults age 35 and older. Through factor analysis, she found five gratification factors from Facebook use, three of which applied to older users: *interpersonal habitual entertainment*, *passing time*, and *self-expression*. While Valentine's study was the first of its kind to specifically address Facebook use by users over the age of 35, other researchers recently began to investigate whether senior adults (ages 52 to 91) have similar motivations for using Facebook [14]. They reasoned that older adults' motivations for using social media sites likely differed from younger adults due to *very dissimilar social roles and activities*. Indeed, [14] found that for adults over the age of 50, the number one reason for using social networking sites is to stay in touch with family (51.1%), compared to staying in touch with friends (22.7%), acquaintances (11.6%), colleagues (10.7%) or connecting with people they have never met (3.9%). This is consistent with national telephone poll data [2], and is in direct contrast to the motives of younger adults, who typically report that staying in touch with friends is their number one reason for using social networking sites [2], [15], [16].

These studies all provide useful information regarding the motives for using social media among different age cohorts, but little is reported regarding reasons for choosing *not* to use (or ceasing to use) social networking sites. Our paper addresses this gap, since understanding such motives (and barriers) to use may help technology developers redesign their sites to improve social connectedness of older adult users, which in turn has potential benefits regarding the general health and well-being of this community.

[2] Facebook Key Facts. http://newsroom.fb.com/Key-Facts

2.2. Age and Social Network Size

As adults move into their fifties and sixties, they often begin interacting less frequently with previous coworkers, friends, and acquaintances due to major life changes such as retirement, death (of friends, family, or spouse), illness or mobility difficulties, and so on [17]. In a 2008 study of real life social networks (vice online social networks), [17] outlines the social connectedness of American adults age 57-85, and they report that the oldest segment of the participant sample had the smallest number of social network connections. Additionally, [4] explored basic demographics of Facebook users (focusing primarily on a younger population where the mean age was about 26 years, with the oldest participant being 66), and also found that the number of friends declined as the age of the participant increased. Based on this literature, we test whether such a pattern of decreasing network size continues to be observed among our cohort of senior adults (as opposed to, for example, leveling off within the cohort).

2.3. Social Network Site (SNS) Activities

In differentiating between different types of social media communication behaviors, [10] identifies three kinds of SNS activities: (1) directed communications with specific, target individuals; (2) broadcast communications, which are not targeted at anyone in particular; and (3) passive consumption of content. In addition to one-on-one targeted communications (e.g., private messaging, synchronous chat), Facebook also supports directed communications on a more public level through wall posts and comments, as well as lightweight interactions such as photo tagging, content sharing, and "likes".

These (semi)public and lightweight interaction mechanisms are fairly novel features of social media communication channels. Even the lightest of lightweight interactions can signal that the person feels that a relationship is meaningful. Because personalized (directed) messages are more likely to contain content such as disclosure and supportiveness that strengthens social ties [10], directed communications are useful cues regarding the strength of existing relationships in social media [18]. Based on previously discussed literature (e.g. [3]–[8]), we hypothesize that such cues might also indicate the satisfaction seniors have regarding their role within their social networks, and our paper addresses this question.

2.4. Age, Social Isolation, & Social Satisfaction

Despite the copious evidence demonstrating the benefits of social connectedness to the health and well-being of older adults (c.f., [3]–[8], [11]), there have been only a few studies specifically targeted towards understanding the role of social media use on social satisfaction and feelings of loneliness and isolation among the elderly. Furthermore, the studies reveal an uncertainty about the relationship. For example, [5] conducted a nationwide survey of older adults (age 55+), but did not find a relationship between participants' Facebook use and their quality of life. On the other hand, [14] report that Facebook users scored higher on assessments of social satisfaction than non-users.

Clearly, the matter remains an open question. Our current work contributes to the knowledge base with regards to this apparent uncertainty. Bell et al. [14] employed the PROMIS scale (see section 3.2.2) and found social satisfaction to be a significant factor distinguishing SM users from non-users. That factor is a distinct motivator for our current research – we use the PROMIS scale to investigate whether there is a difference between *traditional* communication channels and *social media-based* communications on social satisfaction. We also examine the relative impact of SNS specific activities on social satisfaction.

2.5. Research Questions

Our research questions are summarized below. The first two involve descriptive characteristics to help us better understand this specific community, whereas the last two aim to infer relationships between social media use and the social well-being of older adults:

1. What are the distinguishing characteristics of social media users versus non-users among older adults, and why do some choose *not* to use social media technology?
2. Among seniors who are active Facebook (FB) users: a) how do they typically access FB; b) what kind of personal information is shared and what type of content is typically posted; c) what are the representative public/private communication practices, preferences, and concerns; d) besides FB, what other social media technologies are used; and e) is there a relationship between age and size of social networks within the older adult community?
3. Among older adult social media users, what are the differential effects of social media-based communications versus traditional communication channels with regards to social satisfaction?
4. How do specific SNS communication activities (e.g., directed communications, broadcast communications, or passive consumption) impact social satisfaction among older adults?

3. Methods

3.1. Participants

Older adults were recruited from a community of 268 participants enrolled in a long term research program developed to study various aspects of the health and well-being of older adults within the context of their own homes. This Institutional Review Board-approved home-health test bed is comprised of adults age 50 and older who consented to help to longitudinally evaluate health-related products, including technologies that affect health and well-being. For the current study, we deployed a survey (described below) to investigate (1) the characteristics distinguishing social media users from non-users among older adults, (2) common activities of those who self-identified as active social networking site users, and (3) relationships between older adults' communication habits – both online and offline – and their outlooks regarding social satisfaction. Approximately 20 minutes was needed to complete the survey, and respondents were paid $10 for their time. There were 145 initial submissions (54% response rate), but 4 surveys were excluded either because they were less than half completed, or because the respondent did not complete a critical part of the survey needed to calculate our dependent measure related to social satisfaction. As is often the case with surveys, the data collected may contain a high volunteer bias, reflected in the 54% response rate to the survey. Additionally, this sample of older adults is generally high-functioning, as they must meet a certain set of criteria to enroll in the home health test bed. This may, however, be considered beneficial to the current study as we are able to better control for certain variables within our sample population.

3.2. Materials

3.2.1 Social media use survey. The survey is comprised of 92 questions with skip logic that allows respondents to move through the survey based on the answers chosen (14 questions provide the opportunity to respond with additional free text comments, to be analyzed qualitatively). Survey items are divided into four parts. Part one deals with demographics data related to age, gender, ethnicity, education level, income, and marital status. Part two consists of questions from a well validated survey (i.e., the PROMIS scale) used to explore satisfaction with social roles and activities (described below). Part three collects information regarding the frequency with which older adults communicate via traditional versus social media channels. Part four is specific to experience and familiarity with Facebook. The questions in parts three and four were derived from previous literature addressing similar issues [13], [19]. Questions were revised, where necessary, to address an older adult demographic.

3.2.2 Social satisfaction. The Patient Reported Outcome Measurement Information System (PROMIS) is a well-validated 8-item instrument to assess satisfaction with social roles and activities [9]. This assessment tool was chosen because it scores respondents on their perceived ability to do routine tasks associated with being social and meeting the needs of their friends and family. A sample of the Social Satisfaction Scale include: *I am satisfied with my ability to do things for my family; I am satisfied with my ability to meet the needs of my friends*; *I am satisfied with my ability to do fun things with others*. Each question has five response options ranging in value from one to five. To find the total raw score for a short form with all questions answered, the values of the response to each question were summed. For example, for this 8-item form, the lowest possible raw score is 8; the highest possible raw score is 40. A score conversion table was used to translate this total raw score into standardized T-score for each participant (allowing for comparisons to a normalized mean of 50 and a standard deviation of 10 – e.g., a person with a T-score of 40 is one SD below the mean.). Standardized scores range from 26.2 to 65.6 with higher scores indicating higher satisfaction.

3.2.3 Traditional vs. social media communications. We asked both Facebook users and non-users (n=141) to answer 15 questions related to their typical communication habits. We separated communication into two categories: traditional channels versus social media-based channels. Traditional communication included face-to-face, telephone, and letter writing. Social media communications included interacting on Facebook and video chatting (e.g., Skype). Each channel of communication was assessed for three kinds of recipients: 1) their children, not counting any living with them, 2) other family members, and 3) friends. For example, we asked, *how often do you speak on the phone to your children, not counting any who live with you?* and *how often do you video chat with friends?* Participants responded by choosing one of the following options: Never, Yearly, Monthly, Weekly, Daily, or Not Applicable. Frequency was converted to number of incidents reported per year and coded accordingly (e.g., Never=0; Yearly=1; Monthly=12; Weekly=52; Daily=365; N/A=0). This was then summed for each type of communication and for each set of recipients.

3.2.4 SNS communication activities. We asked Facebook users (n=58) to answer 29 questions about typical SNS activities and the frequency with which they en-

gage in each. We categorized SNS activities as either: 1) directed communications, 2) broadcast communications, or 3) passive consumption. Sample questions include: *Reading/responding to news feeds* (directed communication), *Posting photos (*broadcast communication), and *Reading posts on others walls* (passive consumption). Participants responded using the following answer selections: Never, Several times per year, Monthly, Weekly, Daily, and More than once per day. Frequency was converted to number of times reported per year and coded accordingly (e.g., Never=0; Several times per year=6; Monthly=12; Weekly=52; Daily=365; More than once per day=730). Each activity was summed for each type of SNS activity.

4. Results

4.1. Distinguishing characteristics of social media users vs. non-users among older adults

4.1.1 Demographics. Table 1 shows the Pearson's Chi-Square test of independence for each of the demographic categories against the outcome of either being an active Facebook user or a non-user. Table 2 summarizes the demographic characteristics between social media users versus non-users in our sample.

Of the six demographic factors assessed, only age was significantly different between the users and non-users (younger seniors were more likely than older seniors to use Facebook). This likely reflects the lack of variation in our sample, which is quite homogenous with regards to these six demographic factors. While this limitation makes it difficult to assess differences between the user versus non-user groups, it actually becomes an advantage for the rest of our investigation – i.e., it helps us hold these variables relatively constant as we explore our other research questions.

Table 1: Pearson's Chi-Square test against the outcome of either being an active Facebook user or a non-user.

	Pearson Chi-Square	
Age	$\chi^2(39, N=141) = 53.03$	$p = 0.0663$'
Gender	$\chi^2(1, N=141) = 1.56$	$p = 0.2116$
Race	$\chi^2(3, N=141) = 0.92$	$p = 0.8212$
Marital Status	$\chi^2(3, N=141) = 5.24$	$p = 0.1553$
Education	$\chi^2(5, N=141) = 8.74$	$p = 0.1199$
Income	$\chi^2(10, N=141) = 13.06$	$p = 0.2201$

Levels of sig.: '=.1, *=.05, **=.01, ***=.001

Table 2: Demographic characteristics of social media users versus non-users.

	FB Users	Non-FB Users	Total (%)	
Age				
50-64	25	14	39	(27.7%)
65+	33	69	102	(72.3%)
Gender				
Female	43	52	95	(67.4%)
Male	15	31	46	(32.6%)
Race				
White	52	77	129	(91.5%)
Black	4	3	7	(5.0%)
Chinese	1	2	3	(2.1%)
Other Race	1	1	2	(1.4%)
Marital Status				
Single	2	5	7	(5.0%)
Married	37	44	81	(57.4%)
Separated	0	1	1	(0.7%)
Divorced	11	10	21	(14.9%)
Widowed	8	23	31	(22.0%)
Education				
High school/GED	2	15	17	(12.1%)
Vocational Training	6	10	16	(11.3%)
Some college or Associate's degree	16	21	37	(26.2%)
Bachelor's degree	16	13	29	(20.6%)
Master's degree	15	19	34	(24.1%)
Doctoral degree	3	5	8	(5.7%)
Income				
Less than $5,000	0	1	1	(0.7%)
$5,000-$9,999	0	3	3	(2.1%)
$10,000-$14,999	1	11	12	(8.5%)
$15,000-$19,999	6	6	12	(8.5%)
$20,000-$29,999	4	5	9	(6.4%)
$30,000-$39,999	2	7	9	(6.4%)
$40,000-$49,999	3	4	7	(5.0%)
$50,000-$69,999	9	11	20	(14.2%)
$70,000-$99,999	8	10	18	(12.8%)
$100,000+	16	12	28	(19.9%)
No answer	9	13	22	(15.5%)

There were 141 participants included in the final analysis, 95 of whom were female. The mean age of respondents was 71.17 years (SD = 10.69; range = 51-91). The mean age of Facebook (FB) users was 66.09 years (SD = 9.03) and that of Non-Facebook users was 74.72 years (SD = 10.36).

4.1.2 Reasons for non-use. Figure 1 shows the reasons why older adults choose not to use social media. Among non-users, the majority indicated that the reasons they did *not* use FB or other social media was due to lack of interest and/or lack of access to a computer. The remaining responses indicated concerns about security or identity theft, believed social media to be too complicated, or a lack of time.

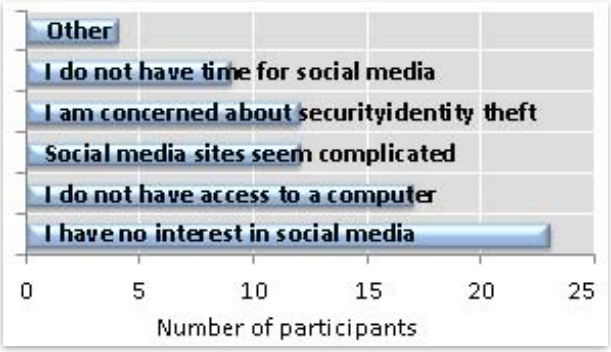

Figure 1: Reasons for not using social media.

Explanations for the 'Other' category included comments such as: *"I enjoy other social activities like bingo - emails - Bible Study - Church activities - travel", "I am not comfortable using Facebook as I do not understand it",* and *"I prefer the convenience of the telephone or just talking together in person".*

4.2. Characteristics of older adults who are active social media users

4.2.1 Demographics. Figure 2 shows the histogram distributions for demographic data of seniors who actively use Facebook (n=58), the majority of whom are educated, married females. This subset of participants makes up the sample that we use in considering the rest of our research questions in the remainder of the paper. The homogeneity of this sample becomes an advantage in our later investigations – i.e., it helps us hold these variables relatively constant as we explore research questions on the relationship between age and network size, and on SNS activity and social satisfaction.

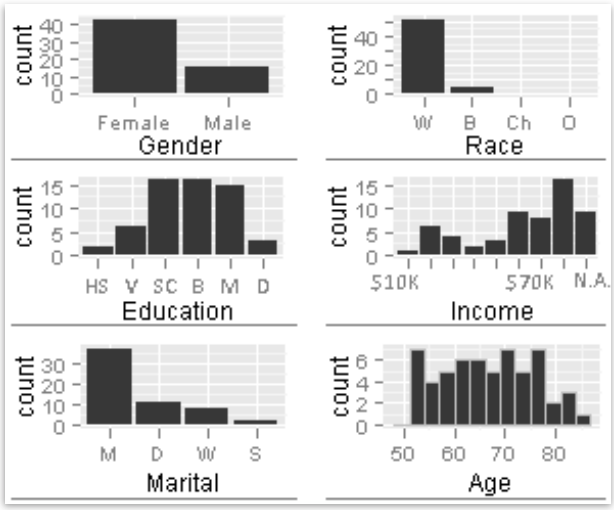

Figure 2: Demographics for the subset of participants who actively use Facebook.

Figure 3: Typical means of accessing social media.

4.2.2 Access. Figure 3 shows typical ways that older adults access social media. Over 94.8% of Facebook users reported that their home computer or laptop was the most typical way they access the site. About a quarter of our sample (25.9%) access FB using mobile phones, followed by 22.4% who used either an iPad or other tablet device. Nine respondents (15.5%) routinely used their work computer to access the site. No one in our sample reported using a shared computer such as one at a local public library or senior center.

4.2.3 Type of personal information shared. Older adult users report that they share personal information on Facebook (see Figure 4). They shared their profile picture (79.3%), education (69.0%), gender (65.5%), birthday (58.6%), work (51.7%), and family information (46.6%). They were twice as likely to share religious views (22.4%) than political views (10.3%).

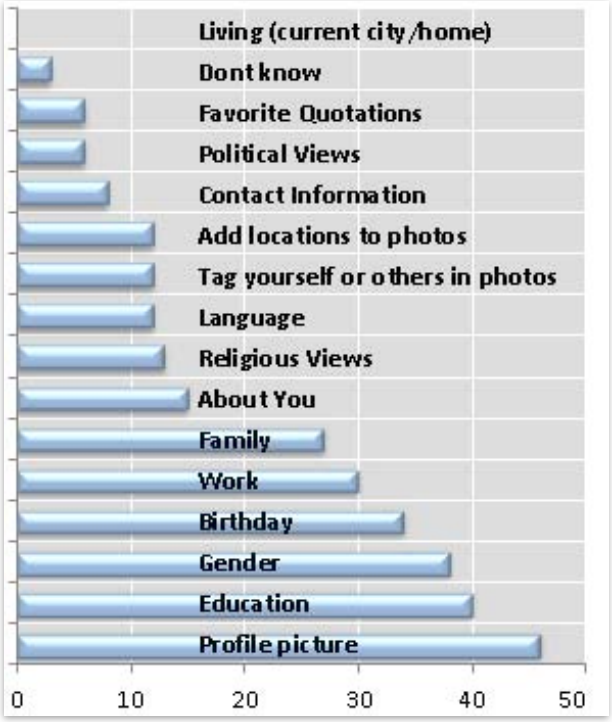

Figure 4: Types of personal information shared.

4.2.4 Typical content posted. Respondents report they are most likely to post content related to family events (63.8%), travels/places (43.1%), and random observations and things that interest them (34.5%), but rarely about political issues (8.6%), sports events (8.6%) or games scores (3.4%).

4.2.5 Public/private communication. Among senior adult Facebook users, 65.5% preferred to communicate on the site by posting comments to their friends' pages. The two reasons reported for this preference were because *"It is easier"*, and *"I get a quicker response"*. Some users (44.8%) reported a preference for sending private messages rather than posting comments to their friends' pages. Only five respondents (8.6%) use Instant Chat in conjunction with the other methods.

4.2.6 Other social media technologies used. Survey respondents who used Facebook were likely to use other common social media applications (see Figure 5), including YouTube (81%), LinkedIn (53.4%), and Classmates.com (43.1%). Other sites included Pinterest (31%), Twitter (24.1%), and Match.com (17.2%)

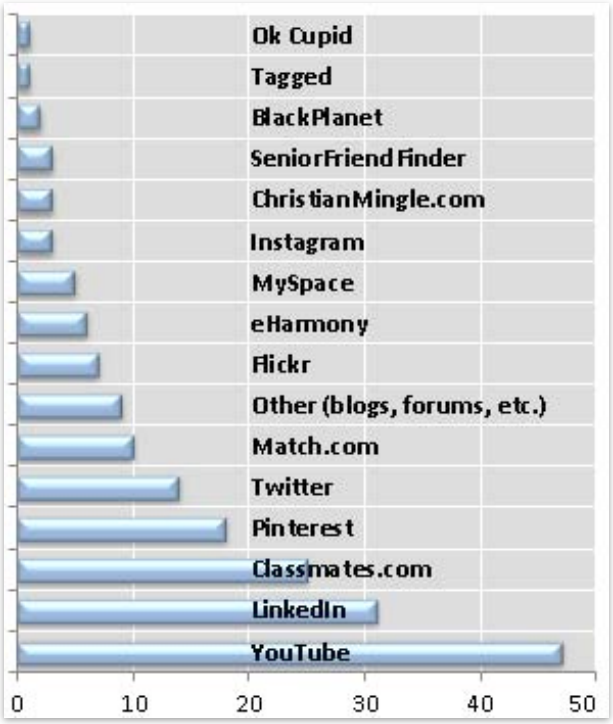

Figure 5: Other social media technologies used.

4.2.7 Age and social network size. As expected, we found a statistically significant relationship between age and the size of a person's social network among our 58 active FB participants (see Figure 6). The Pearson correlation coefficient ($r = –0.527$) indicates a very

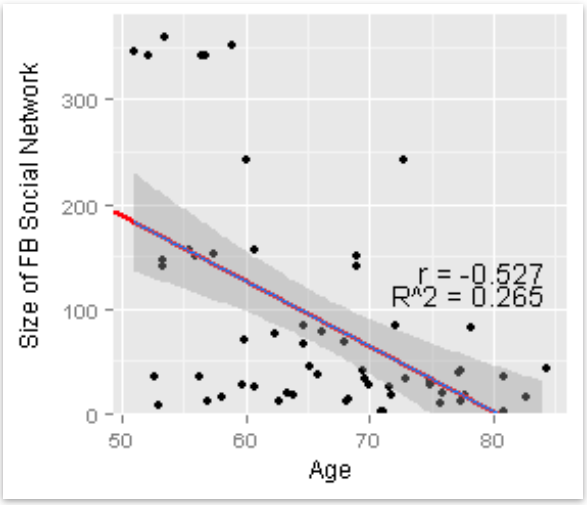

Figure 6: Age and size of Facebook social networks.

strong[3] negative linear relationship between the two variables, and this relationship is highly significant, $t(56) = -4.64$, $p << 0.001$. In other words, older seniors had distinctly smaller social networks than younger seniors.

The remaining two subsections describe the relationship between older adults' social role satisfaction and different aspects of their social media use. Figure 7 depicts the density plots for the dependent measure (PROMIS scores) and several input variables used in the linear regression analyses. Control variables included age, gender, ethnicity, education, and marital status. Independent variables were:

- Number of times per year using traditional communication channels (e.g., face-to-face, phone, e/mail) and social media channels (SNS, video chat)
- Familiarity with Facebook, calculated as the sum of:
  - Estimated days the respondent has been a FB user, coded from survey responses as follows: 730=A few years; 90=A few months; 21=Just getting started; 7=I have a little experience, but I rarely log in to my account
  - Estimate of annual frequency of accessing FB (730=More than once per day; 365=Daily; 52=Weekly; 12=Monthly; 0=Never)
  - Hours per week on FB
- Estimated ratio of times per year they performed each type of SNS communication activity (directed, broadcast, and passive consumption)
- Size of Facebook network (i.e., number of friends)

[3] The Cohen scale [20] has become the *de facto* standard in behavioral science research for categorizing the magnitude of linear relationships. According to this widely cited scale, Pearson correlation values approximately equal to ±0.1 are considered *weak*, ±0.3 are considered *moderate*, ±0.5 are considered *strong*.

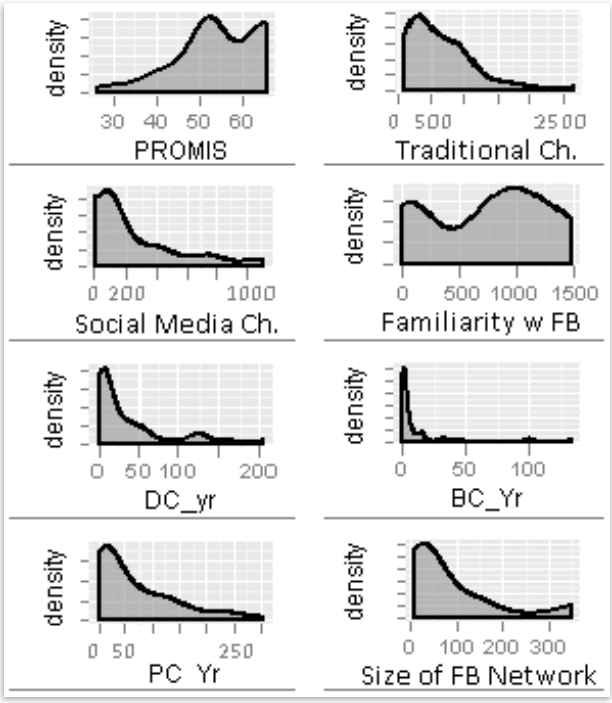

Figure 7: Density plots for the dependent variable (PROMIS scale score) and the independent variables. The x-axes of the density plots represent the measured value of the variable, and the y-axis indicates the density of users observed at a particular value.

4.3. Effect of social media-based vs. traditional communications on social role satisfaction

We asked questions about the ways in which respondents communicated with their friends and family. The more common method of communicating was via traditional channels, such as conversations over the telephone or face-to-face, rather than social media (see Figure 7). Respondents reported convenience and ease of talking in person as reasons for preferring traditional methods of communication – a theme that was echoed in open-ended comments to the survey questions. For example, one participant stated: *"Basic social exchanges of words and letters have served me well for 79 years and I have elected not to spend the time or energy in developing the new concept of social media."*

Table 3 shows the unstandardized coefficients (*b*), standard error, standardized beta (*β*) coefficients, and the significance levels (*p*-value) for each of our input variables. Regression analysis of the effects of using traditional versus SNS communication channels on social role satisfaction (after controlling for demographic factors, familiarity with Facebook, and network size) indicates that there is no significant impact resulting from the choice between traditional communication channels and social media technologies such as SNS or video chat. Social media does not replace traditional channels of interaction for older adults; it *complements* them with different types of interactions.

Table 3: Unstandardized coefficients (*b*), standard error, standardized beta (*β*) coefficients, and significance levels (*p*-value) from a linear regression model.

	b	Std. Err.	Std. *β*	*p*-value
Age	0.0152	0.1844	0.0138	0.935
Gender	**5.6667**	**3.0974**	**0.2519**	**0.074`**
Race	1.0090	3.3553	0.0403	0.765
Education	0.7327	0.7358	0.1327	0.325
Marital Status	0.5592	1.7689	0.0495	0.753
Traditional Ch.	0.0055	0.0033	0.2809	0.104
Social Media Ch.	–0.0007	0.0053	–0.0214	0.895
Familiarity w/ FB	0.0007	0.0041	0.0354	0.874
Directed Comm.	**0.1248**	**0.0523**	**0.5747**	**0.021***
Broadcast Comm.	0.1277	0.0810	0.2881	0.122
Passive Consump.	0.0033	0.0419	0.0253	0.938
Size of Social Net.	0.0068	0.0164	0.0727	0.6817

Levels of sig.: '=.1, *=.05, **=.01, ***=.001

4.4. Impact of SNS communication activities on social satisfaction

The results of the linear regression analysis shown in Table 3 indicate that directed communications (i.e., those targeted to a specific person) on the SNS site, Facebook, significantly correlate with social role satisfaction on the PROMIS scale. As the number of directed communications per year increases, so does older adults' satisfaction with their own roles and activities within their social networks.

5. Discussion

We explored descriptive characteristics to help us better understand a previously overlooked community of users, revealing the distinguishing characteristics of social media users versus non-users among older adults (age 50 and over). We found that married, educated females within the lower age ranges of older adults tended to be the ones who self-reported as being social media users.

We also explored the reasons why some older adults choose *not* to use social media technologies. Of the reasons given, the issues related to security/privacy and the perceived complexity of the sites can be ad-

dressed by design. Given the rapid rate of growth for this community of users [1], and the general benefits to the health and well-being that accompany increased social connectedness for older adults (e.g. [6]–[8], [11]), it seems that addressing such issues would be a worthwhile venture for both the technology developers and the end users.

In keeping with the technology theme, we found that older adults typically access social media from their home computers – this, even in the midst of a growing number of general users accessing social media sites via their mobile devices [21]. This may be related to the fact that older adults often shy away from 'new' technologies, oftentimes intimidated by it, though sometimes just resisting change to normal routines. Inevitably, some of the adoption to new technologies has to do with improved design; but, in order for such designs to be effective, it is essential to understand the underlying factors which motivate different segments of the user population to use (or not to use) them. Such understanding can be acquired via research, as evidenced by the present study. This awareness can lead to improved designs in technology and more focused applications for a growing segment of society.

We also found a significant relationship between age and network size - older seniors had distinctly smaller social networks than younger seniors. A strong correlation between smaller networks and increasing age has implications for the study of social networks in general. For example, as the locus of social networks begins to shift away from colleagues and other workplace acquaintances more towards family and close friends, one might postulate that older adults may begin to develop stronger ties to members of their shrinking network. If the strength of ties between older adults and their network members is significantly stronger than the ties between younger adults in otherwise comparable networks, then this has meaning for a broad range of research interests that are based on social network simulation models or general studies of the diffusion of innovations [22]. While we examined the strength of the relationship between age and the size of social networks among older adults, what we were not able to answer here is whether older adults with *fewer* connections actually have *stronger* connections among their network ties. We leave this interesting question to future work, but the current study certainly serves to inform such work.

Among older adult social media users, we found no differential effects of social media-based communications versus traditional communication channels with regards to social satisfaction. Seniors appear to use social media communication to supplement traditional forms of communication without impacting their social satisfaction. However, when contrasted against other SNS specific communication activities, older adults with more directed communications per year had significantly higher satisfaction with their own role and activities within their social networks. Direct interactions are comparatively more effortful than broadcast communications or passive consumption, but these interactions are a simple and convenient way to remain engaged in at least some part of another's daily life. Even the lightest of lightweight interactions can signal that the person feels that a relationship is meaningful – an important part of building and maintaining strong social connectedness for seniors.

6. Conclusion

In this paper, we study a previously unexamined segment of social media users (those over age 50), while simultaneously addressing several open questions related to (a) contrasting motivations for use or non-use due to dissimilar social roles and activities, (b) decreasing network size associated with increasing age within this cohort of older adults, (c) specific SNS activities that are useful as cues regarding the degree to which older adults perceive their own ability to do routine tasks associated with being social and meeting the needs of their friends and family, and (d) addressing the apparent uncertainty regarding the impact of social media use on social role satisfaction among the elderly.

The result of the rapid increase in aging adults is of great significance in both science and technology. People are living longer, not only with physical impairments (visual, mobility) but also with cognitive and mental health issues (dementia, depression). Motivational factors for staying connected is becoming more essential to helping older adults function independently (e.g., age in place) and embrace a healthy sense of well-being. Understanding this special population will help researchers and technologists alike better accommodate the needs of the elderly.

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