

The impact of Social Network Sites on social capital for older adults

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Abstract

Background: As we age, our social relationships tend to dissipate due to changing life circumstances. This reduction in social relations for older adults tends to negatively impact the quality of life, in the form of increased social isolation and loneliness.

Objective: The purpose of this study is to gain further understanding of how the different facets of using Social Network Sites (SNSs) can influence social relationships and the bonding and bridging social capital of older adults.

Method: A theoretical model and hypotheses were developed to reflect social relationships and a structural equation approach was utilized to test the model. This involved an online survey in Canada that collected data from 330 participants over the age of 65 that use SNSs.

Results: The empirical results suggest that how SNSs are used does impact whether social connections are enhanced or maintained. The active use of SNSs, along with the number and type of contacts, has a positive effect on social relationships. Yet, more intensive use of SNSs does not influence social relationships. In fact, the types of messages, either informational or private, that are exchanged differed in their impact on social relationships. Private message content positively affects close relationships and informational content positively affects weak social relationships.

Conclusion: The study found that certain components of SNSs use have a positive effect on older adult relationships. This study enriches and extends the literature pertaining to SNSs influence on social capital. It has created new facets of SNSs use, while also studying a combination of previously examined facets together to create more clarity on their influence on social capital.

Keywords: Social Network Sites (SNSs), social capital, older adults

INTRODUCTION

Due to life changes, social connections tend to dissipate for people as they age beyond 65 (Antheunis et al., 2015). For example, changes that reduce social connections can result from retirement, death of family members or friends, becoming a family caregiver, or losing contact with others due to relocation away from friends and family (Cotten, Anderson, & McCullough, 2013). Changes in circumstances may also negatively affect social connections; for example, financial constraints or health issues may reduce functional ability or mobility (Victor et al., 2000). Social connections have been viewed as a resource that may help insulate older adults from declining health and cognitive strength (Gilmour, 2012). Cognitive decline may be reduced when older adults are more socially connected (Zunzunegui et al., 2003). This may also increase the likelihood of good physical health and reduced mortality (Cotten, Anderson, & McCullough, 2013). The probability of being socially isolated and lonely decreases when older adults have more social connections (deJong Gierveld, Keating, & Fast, 2015). This can help to reduce the negative

consequences of aging for older adults.

Social Network Sites (SNSs) are online websites that allow for communication, collaboration, and sharing of content among various users (Boyd & Ellison, 2008). SNSs can support communications with others in a virtual environment, by both creating new relationships and enhancing existing relationships (Kaplan & Haenlein, 2010). Social capital is defined as the strength of one's ties to others; it is known to have a positive impact on the wellbeing of older adults (Sum et al., 2008). SNSs can also help to strengthen the bonding and bridging of social capital of their participants (Antheunis et al., 2015).

Social media is defined as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and allow the creation and exchange of user-generated content" Kaplan & Haenlein (2010) (pg. 61). SNS is a subtype of social media. SNSs are online sites that allow users to construct a profile, create a list of connections (which may be public or private), and communicate with others on

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the site through various methods such as posting, texting, etc. (Boyd & Ellison, 2008; Kaplan & Haenlein, 2010).

SNSs are used for various reasons, such as finding and distributing information and connecting with others. Seven themes have been hypothesized for individual use of SNSs (Whiting & Williams, 2013), including social interaction, information sharing/seeking, passing the time, entertainment, relaxation, communication utility, and convenience utility. In addition, SNSs enable users to coordinate group activities efficiently and to mobilize social causes easily (Ellison, Steinfield, and Lampe, 2010).

Social capital is the "connections among individuals - social networks and the norms of reciprocity and trustworthiness that arise from them" (Putnam, 2000) p. 19. Social capital is a theoretical framework that can be used to examine and understand social relationships (Portes, 1998). Social capital consists of two different types: bonding and bridging (Erickson, 2011). Bonding social capital (BOSC) is the social capital created through connections with close friends and family in the form of strong ties (Erickson, 2011). Bridging social capital (BRISC) is the capital created through weak ties to those outside of one's BOSC network (Erickson, 2011).

Social capital is derived from one's social networks, stemming from reciprocity and trustworthiness within the networks. The norms of reciprocity facilitate support through implied mutual agreements (Sum et al., 2008). An individual's social capital can be created and expanded over time. But if not nurtured the quality and extensiveness of an individual's social network decreases. The many life changes of older adults tend to have a negative impact on the quality and quantity of their social network connections (Cotten, Anderson, & McCullough, 2013).

A great deal of literature exists pertaining to the impact of the Internet and more specifically SNSs on the social capital of individuals. Some studies have simply studied the fact that an individual utilizes SNSs, with the most common being the study of older adults using Facebook (Ahmad, Mustafa, & Ullah, 2015; Su & Chan, 2017; Ellison, Lampe, & Steinfield, 2007). Other studies have examined how the frequency of SNSs use affects building social capital, with varying degrees of influence ranging from negatively impacting, to no impact or positively impacting an individual's social connections (Ahmad, Mustafa, & Ullah, 2015; Li & Chen, 2014; Kwon, D'Angelo, & McLeod, 2013). Other studies have examined different measurements of SNSs usages, such as type or number of contacts, and their varying in-

fluence on enhancement or extension of social connections (Ellison, Lampe, & Steinfield, 2007; Vanden Abeele, et al., 2018). Other studies have found that SNSs may enhance communication although a relationship between social capital and the online community may not be realized (Lee & Lee, 2010). This suggests that how one utilizes electronic media, such as SNSs, influences social capital differently. To date the research on how SNSs influence individual social connections have been inconclusive. There is general agreement that further research is necessary to develop a better understanding of how SNSs can be used by individuals to meaningfully impact their social connections (Ellison, Steinfield, & Lampe, 2010). Older adult use of social networking differs from other age groups. For example, in 2019, 79% of individuals aged 18-29 used Facebook while only 40% of those over the age of 65 did (Pew Research Center, 2019). In 2013, 74% of those between the ages of 65-69 were online, but only 37% in the over 80-age group were (Pew Research, 2014). The income and education level of older adults was a determining factor in online use; those with higher income and education levels were more likely to be online (Hunsaker & Hargittai, 2018).

Varansi, Diccio, & Gambino (2018) found that individuals receiving positive reactions, in the form of likes on Facebook to specific posts, positively influenced the social capital of the poster. In studies that have examined the use of Facebook influence on social capital, the findings have been inconclusive; some suggest a positive influence while others find no relationship (Erickson, 2011; Johnston et al., 2013; Kahai & Lei, 2019). This suggests that the influence of SNS use on social capital at this point is not conclusive.

Although SNSs have the capability of enhancing and extending social relationships for individuals (Boyd & Ellison, 2008), how SNSs can enable social connections has not been fully studied. While there has been research on whether SNSs can create or enhance an individual's social capital, this has not yet provided a definitive answer (Quinn, 2016; Wellman et al., 2001). Quinn (2016) has suggested that the impact on social capital may vary by how one uses SNSs and other social media since not all types of use tend to impact social capital. When social media is utilized to maintain relationships, the outcome for social capital relates to the level of its use. In his study, Quinn states, "a greater nuance is called for when examining the effects of social media" (pg. 593) - suggesting that the way individuals use SNSs can influence their level of social capital: decreasing, increasing, or maintaining it. This indicates that SNS value in increasing social connections depends on how effectively

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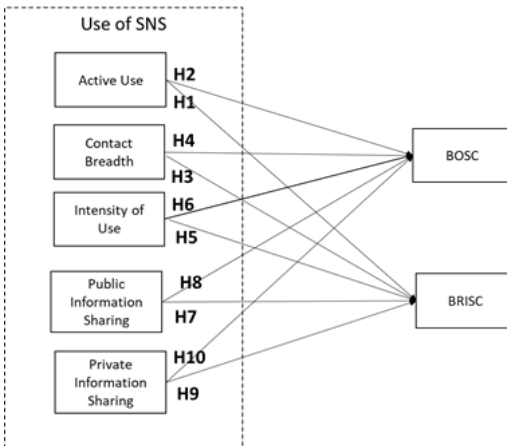


Figure 1. Theoretical model

these systems are used in increasing or maintaining social capital. The objective of this research is to understand how older adult use of SNS will impact older adult relationships.

METHODS

Our research model is designed to examine the influence of the different facets of SNSs use on social connections for older adults (Figure 1). We use social capital as the underlying theoretical foundation to explain the effect that SNSs can have on social connections, based on the fact that social capital represents the intangible resource of social connections for individuals and society (Coleman, 1988). We examined the use of SNSs, including how individuals use the media and how their use could be examined in the context of social relationships. The components of their use were based on how active or passive the interaction was, the amount of use, the number and type of contacts, and the type of information shared among individuals.

Active use

SNSs are used for many different purposes, depending on the individual, including entertainment, information seeking, passing the time, and social interaction (Whiting & Williams, 2013). SNSs use can be categorized as either active interaction or passive consumption/use (Burke, Marlow, & Lento, 2010). Active use of SNSs includes posting, broadcasting, and direct communication with others, all of which include a social exchange between users (Burke, Marlow, & Lento, 2010). The more actively an individual uses SNSs the more likely it that social connections will be either created or maintained (Burke, Marlow, & Lento, 2010). This creation or maintenance of social connections affects an individual's social capital positively.

Broadcasting is one-way communication that can be directed to numerous individuals or groups of individuals at one time. Broadcasting can disseminate information easily, such as status updates or posting holiday letters to large groups of people (Burke & Kruat, 2014). Older adults use broadcasting in the form of blogs, posts, and status updates for others to consume (Osatuyi, 2013). The mere act of frequently updating one's online social profile can increase feelings of social inclusion for the individual (Deters & Mehl, 2013). This suggests that one-way communication gives the individual increased perceptions of inclusion within a group and thus increases social capital. Broadcasting is a form of information sharing, so broadcasting information can also have a positive influence on bridging social capital. The other form of active use is direct communication. This is a form of two-way communication that enables users to share information and connect with close friends and family. Direct communication can strengthen both weak and strong ties for older adults. Thus, active use of SNSs is considered direct communication and broadcasting of information and content to others. Therefore, active use of SNSs will have a positive impact on both bondings (BOSC) and bridging (BRISC) social capital.

H1: Active Use of SNSs will positively influence BRISC

H2: Active Use of SNSs will positively influence BOSC

Contact breadth

Contact breadth is defined as the number and variety of connections that a person has through SNSs. The number of contacts an older adult has on SNSs is an indicator of the scope of connections they have (Kietzmann, Hermkens, & McCarthy, 2011). Those that have a limited number of connections tend to use SNSs to connect with strong ties, comprising mainly close friends and family (Erickson, 2011). Thus a narrow or small contact profile tends to strengthen and enhance an individual's strong ties. A large and broad set of social connections suggests that such individuals utilize SNSs as a means to connect with individuals with whom they have either strong and weak ties. Individuals with a broad social network tend to be highly connected online, which is evident from the numerous individuals and groups they are connected to (Erickson, 2011). This suggests that broader contact breadth will have a positive impact on bridging social capital (BRISC). On the other hand, a broader contact breadth will not increase bonding social capital (BOSC) and quite possibly negatively influence it.

H3: A broad breadth of contacts will positively influence BRISC

H4: A broad breadth of contacts will negatively influence BOSC

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Table 1. Construct validity and reliability

	Cronbach's Alpha	Composite reliability	Average variance extracted (AVE)
BOSC	0.874	0.909	0.667
BRISC	0.834	0.889	0.668
Intensity of use	0.700	0.832	0.626
Private information	0.724	0.844	0.644
Public information	0.719	0.842	0.640

Intensity of use

The intensity of use pertains to the amount of use, in time and frequency, of SNSs. As an example, the amount of actual use of Facebook tends to increase social capital for the user (Ellison, Lampe, & Steinfield, 2007). This suggests that the more time an individual is engaged in SNSs use, the more positive impact there is on the individual's social capital. The more frequently individuals are actively using the medium, the more interaction they will have with others. As a result, the intensity of use will increase both bonding and bridging components of social capital. With an increase in the amount of time spent and the frequency of use for connecting with family and close friends, the ties between them (BOSC) will be strengthened. More time and frequency spent connecting to weaker social ties (BRISC) will increase the quantity and quality of those connections. Thus, the following hypotheses are proposed.

H5: Intensity of use of SNSs will positively influence BRISC.

H6: Intensity of use of SNSs will positively influence BOSC.

Message content

Message content refers to the level of intimacy of the messages older adults send to others. Message content is divided into two distinct categories, public or private. In many SNSs, for example, Facebook, the user can post to specific users or groups, enabling them to direct messages intended to be either private or public (Lipford, Besmer, & Watson, 2008). The use of the privacy settings, or the ability to allow only specific individuals/groups to view the content, enables users to project different information to whom they wish (Kim, Jeong, & Lee, 2010). This filtering of the message to specific recipients is dependent on the content and whether it is deemed suitable to be consumed by all or just a few.

The difference in the level of intimacy of posted message content also suggests the type of relationship with the recipient. Private or more personal information tends to be shared with close friends and family (Granovetter, 1973), indicating that older adults are more inclined to share personal or emotional content in their messages with those they are close to. Thus, more private or personal message content will influence BOSC positively. However, the extent of private

or personal content in the message will not influence BRISC, as these relationships are not at that level of intimacy.

The less intimate the relationship is, the more message content would tend to be informational in context (Granovetter, 1973). Thus less intimate

or public messages are more likely to be shared with both strong and weak ties in one's social network (Kramer et al., 2014). Public information in communication between individuals tends to increase BRISC (deJong Gierveld, Keating, & Fast, 2015). Thus, messages with a public context tend to positively impact both BRISC and BOSC.

H7: Sharing public information through SNSs will positively influence BRISC.

H8: Sharing public information through SNSs will positively influence BOSC.

H9: Sharing private information through SNSs will negatively influence BRISC.

H10: Sharing private information through SNSs will positively influence BOSC.

A structural equation model (Figure 1) was created to test the hypotheses consisting of seven constructs. The constructs were formed from previous literature where possible, those being BOSC, BRISC, the intensity of use, and contact profile. The construct measurements were adopted from existing literature or developed when they were not available (Active Use, Private Information Sharing, and Public Information Sharing), using the steps outlined by Bowden et al. (2002) and Moore & Benbasat (1991). Table 5 gives the constructs and respective scales. All constructs were measured on a 7-point Likert scale ranging from highly agree to highly disagree. Two of these are formative (Active Use and Contact Breadth) and the other four are reflective.

Participants were recruited through an online survey, which has several advantages, including reduced cost and time, along with an increase in the geographical range (Bhattacharjee, 2001a). A further advantage is that the online format automatically screens out individuals who are not using SNSs since they are not online. The survey was a cross-sectional analysis to give an understanding of opinions at a specific point in time. Data collection was conducted by the Qualtrics market research agency (Qualtrics.com is a market research company that uses online survey software, with a large number of available participants.), utilizing their resources.

The sample was limited to Canadian participants over the age of 65, resulting in 330 usable responses. The survey sample consisted of 70%

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Table 2. Model fit summary tests

	Original value	Upper bound confidence interval 95%	
d-ULS	1.959	1.966	Accept
d-G1	0.986	1.518	Accept
	Original value	Fit indices	
SRMR	0.058	<0.08	Accept
NFI	0.799	<0.90	Accept

female and 30% male participants, which is skewed in comparison with the Canadian older adult population of 54.1% female and 45.9% male in 2018 (Statistics Canada (a), 2019). This is consistent with the study by Smith (2008) that found female participants were more likely to participate in an online survey. The sample consisted of 83% in the age group 65-74, 15% in the age group 75-84, and 2% over the age of 85.

RESULTS

The model was tested using SmartPLS 3.0 in two phases. The first phase tested the reliability and validity of the measurements (Gefen & Straub, 2005). The second phase tested the model using a bootstrap sample of 500.

Reliability and validity

The reflective constructs showed acceptable reliability, as all Cronbach's alpha measures and the composite reliability were above the 0.70 thresholds (Table 1) (Gefen, Straub, & Boudreau, 2000). Validity of the constructs was also assessed with four different techniques employed: factor loadings, cross-loading analysis, Fornell-Larcker Criterion, and Heretotrait-Monotrait Ratio. The cross-loadings were found to be significant with t-values >1.96, suggesting convergent validity of the constructs (Chin, 2010).

To assess discriminant validity, the Fornell-Larcker criterion results show adequate validity of the constructs (Table 3). The Heretotrait-Monotrait ratio for most of the constructs was below the tolerance level of 0.850 (Table 4). The exception was the ratio between BRISC and the public information message content which is 0.852, slightly above the tolerance of 0.850. As all other indicators for these two constructs were within tolerance and the Heretotrait-Monotrait ratio was just slightly above the tolerance level, discriminant validity was assumed.

To assess for the reliability of formative constructs (Active Use and Contact Breadth) lack of multicollinearity between the indicators is required. We used the variance inflation factors (VIF) to assess multicollinearity. Both Active Use and Contact Breadth VIFs were below the 3.3 thresholds which suggest that multicollinearity is not an issue for either construct (Figures 2 and 3) (Hair, Ringle, & Sarstedt, 2011).

As the data were collected using a self-reported survey, the model was assessed for common method bias. The survey instrument was created with several different indicators to define each construct with those for each construct being separated from others for the construct in the survey questionnaire to aid in reducing common method bias (Podsakoff et al., 2003). Common method bias was assessed using both Harmon One Factor analysis and analysis of VIF for all constructs. For the Harmon One Factor analysis, no single factor emerged from the analysis and no general factor accounted for the majority of the covariance among the measures, the largest being 0.477 (Podsakoff et al., 2003). The VIFs for all indicators of the constructs were below the relatively stringent threshold of 3.3, thus suggesting that common method bias was not an issue (Kock, 2015).

The model was assessed for structural validity using R2 goodness of fit measurements for the individual constructs for social capital. The R2 of the model was 0.420 (BOSC) and 0.540 (BRISC), with the adjusted R2 being 0.413 and 0.535 for BOSC and BRISC respectively. Accordingly, the R2 levels are seen as moderate in their predictive accuracy, suggesting that the constructs for BOSC and BRISC perform well in this model (Hair, Ringle, & Sarstedt, 2011).

To further assess the goodness of fit of the model, several other measures were used (see Table 2). First, the Standardized Root Mean Square Residual (SRMR) was examined, which was below the threshold of 0.08 at 0.058 (Hu & Bentler, 1998). Secondly, the Normal Fixed Index (NFI) is 0.799, further suggesting a good model fit (Bentler & Bonett, 1980). Third, the model's fit was assessed using squared Euclidean value (d-ULS) and geodesic

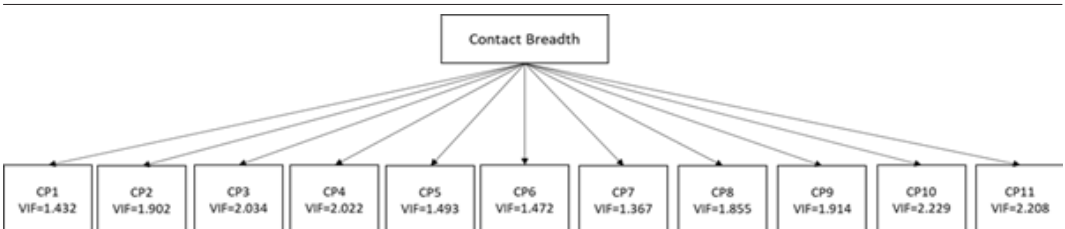


Figure 2. VIF contact breadth

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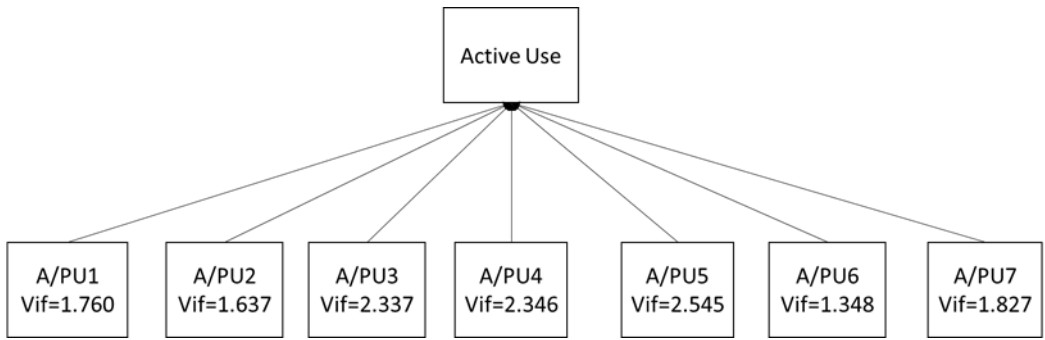


Figure 3. VIF active use

distance (d-G1). The two techniques d-ULS and d-G1 examine the difference between the model's implied correlation matrix and empirical correlation matrix. If the difference is small enough to be attributed to sampling error, the implication is that the model is a good fit if they fall within the confidence intervals (Dijkstra & Henseler, 2015). All four measures used for assessing goodness of fit indicated that the model is a good fit.

Model findings

The empirical test of the model (Figure 4) shows that a majority of six of the hypotheses of SNSs use concerning bridging and bonding social capital was not rejected, but four were rejected at a significance level of 0.05.

The model showed that active use of SNSs positively influences BRISC ($\beta=0.188$, $p<0.05$) as hypothesized (H1) in the model. Active use of SNSs also positively influences BOSC ($\beta=0.178$, $p<0.01$) as hypothesized (H2). Social connec-

tions tend to increase with the active use of SNSs through posting, broadcasting, and directly communicating with others. These findings suggest that, just as in the real world, cyber relations need to be nurtured and strengthened through contact and interaction.

Broad contact breadth positively influences BRISC ($\beta=0.200$, $p<0.001$) which supports hypothesis H3. Hypothesis H4 was also supported, in that a narrow contact breadth positively influences BOSC ($\beta=0.167$, $p<0.05$). Thus, the larger the breadth of social contacts through SNSs for older adults the higher the positive impact on BRISC. At the same time, a limited number and type of connections positively influence BOSC.

The intensity of use of SNSs was expected to positively influence BRISC (H5) but was not supported ($\beta=0.048$, n. s.). The intensity of use of SNSs was also expected to positively influence BOSC (H6) but was not supported ($\beta=0.057$, n. s.). These findings suggest that it is not how much

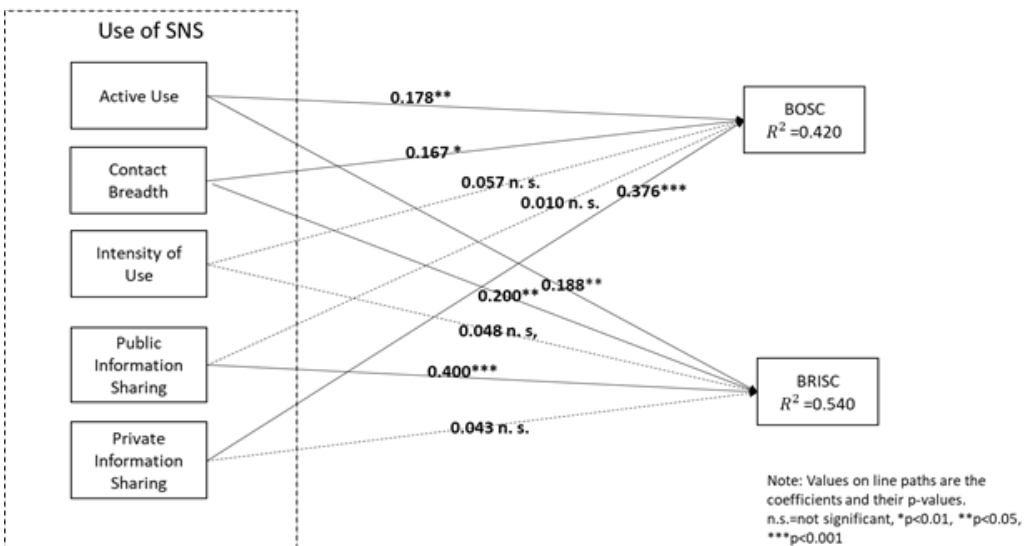


Figure 4. Model results

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Table 3. Fornell-Larcker criterion

	Active use	BOSC	BRISC	Contact breadth	Intensity of use	Private info	Public info
Active use	-						
BOSC	0.538	0.817					
BRISC	0.627	0.574	0.817				
Contact breadth	0.743	0.537	0.620	-			
Intensity of use	0.478	0.345	0.376	0.453	0.791		
Private info	0.539	0.587	0.467	0.549	0.329	0.803	
Public info	0.610	0.421	0.670	0.589	0.333	0.492	0.800

or how often that one connects with other older adults through SNSs, but something else might, such as the quality of the connection contributing to cyber social capital.

The type of message content was found to influence BOSC and BRISC differently. That is, public information sharing had a positive influence on BRISC ($\beta=0.400$, $p<0.001$), supporting hypothesis (H8). At the same time, hypothesis H7 was not supported in that public information sharing did not significantly influence BOSC ($\beta=0.010$, n. s.). The sharing of public information tends to extend and enhance the relationship between weak ties (BOSC). This influence of sharing public information does not appear to extend to strong-tie relationships.

Private information sharing did not negatively influence BRISC ($\beta=0.043$, n.s.), as H9 hypothesized. But private information sharing positively influenced BOSC ($\beta=0.376$, $p<0.001$) supporting hypothesis H10. Thus, messages that contain private information tend to positively impact strong-tie relationships, but the influence of private and emotional content had no impact on weak tie relationships.

DISCUSSION

This study examined the influence that SNSs usage had on enhancing online social capital for older adults. To accomplish this, SNSs usage was broken down into different facets, to aid in understanding how SNSs usage affects the social connections of older adults. Two types of social connections were examined: those where the older adult was emotionally close to the other individual and those where the older adult was not.

The use of SNSs aids in extending and enhancing social connections for older adults. However, the way in which the medium is utilized influences whether social connections are increased or maintained. The more intensely SNSs are used does not seem to enhance or strengthen relationships, for either those that are emotionally close to the individual or those that are not. This finding that more intense use of SNSs has no impact on an increase of online bridging social capital differs from some previous studies (Ellison, Lampe, & Steinfield, 2007; Ahmad, Mustafa, & Ullah, 2015; Su & Chan, 2017). Yet it concurs with previous research that has found that increased frequency and duration of SNS use do not influence bonding social capital (Ellison, Lampe, & Steinfield, 2007; Ahn, 2012). On the other hand, other studies have found that intensity of use has positively impacted BOSC (bonding social capital) (Ahmad, Mustafa, & Ullah, 2015; Su & Chan, 2017). These disparate findings suggest that there may be a nuance in how the use of SNSs influences the creation of bonding and bridging social capital than previous research was able to capture. That is, the creation of bonding and bridging social capital may result from how SNSs are used and not in their frequency and duration of use.

It was found that an increase in the number and type of contacts among older adults that are possible through SNSs does seem to increase their social connections with friends and acquaintances. However, a larger breadth of connections did not seem to influence social capital with those who are close to older adults. This could be due to the possibility that most of the older adults in the survey already had close friends and family in their contact list, with SNSs being a substitute for other forms of communication which would therefore not increase the number of online social connections.

The findings suggest that the type of content of messages was found to impact social connections for older adults. The private/personal content of the messages had a positive influence on the relationships of those emotionally close to the older adults.

Table 4. Heterotrait-Monotrait ratio

	BOSC	BRISC	Intensity of use	Private info	Public info
BOSC					
BRISC	0.669				
Intensity of use	0.424	0.477			
Private info	0.733	0.596	0.452		
Public info	0.530	0.852	0.458	0.682	

Note: The ratio between BRISC and public information message content is 0.852, which is above the tolerance of 0.850. All other ratios are below the tolerance level.

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Table 5. Construct definition and measurements

Construct	Definition	Survey measurements	Developed from
Active use	Active posting, commenting and interacting with others	I use SNSs to send pictures to specific people and/or everyone. I use SNSs to send videos to specific people and/or post for everyone. I make comments on others posts and blogs in social networks. I use SNSs to email others. I use SNSs to have conversations with others. I use SNSs to express my views by posting them. I use SNSs to forward information I have read to others.	Self-developed
Contact breadth Alpha=0.842 CR=0.896 AVE=0.677	The number and type of social connection.	Do you connect with ... on SNSs? 1. Family members, 2. Friends, 3. New Friends, 4. Religious Groups, 5. Hobby Groups, 6. Special Interest Groups, 7. Other Groups.	(Litwin, 2001)
Intensity of use	Is the frequency and amount of time SNSs is used	How often do you use online Social networks? <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily <input type="checkbox"/> Hourly <input type="checkbox"/> Constantly How much total time a day do you spend on online social networks? <input type="checkbox"/> Less than an hour <input type="checkbox"/> One hour <input type="checkbox"/> 1-2 hours <input type="checkbox"/> 2-4 hours <input type="checkbox"/> 4More than hours On average what is the amount of time that you spend per visit on online social networks? <input type="checkbox"/> 1-10 minutes <input type="checkbox"/> 10-20 minutes <input type="checkbox"/> 30 -60 minutes <input type="checkbox"/> 1 -2 hours <input type="checkbox"/> More than 2 hours	(Morhan-Martin & Schumacher, 2003)
Public information sharing Alpha=0.719 CR=0.842 AVE=0.640	The informational content of the communication.	I use SNSs to share public information with others. I use SNSs to obtain information from my connections. I use SNSs for finding public information such as news, blogs, etc.	Self-developed
Private information sharing Alpha=0.724 CR=0.845 AVE=0.644	The private and/or emotional content of the communication.	I use SNSs to communicate personal information with others. I use SNSs for communication of an emotional nature, such as issues with relationships, health problems, etc. When I want to have a private chat with friends and family, I use social networks to communicate with them.	Self-developed
Bonding social capital Alpha=0.874 CR=0.909 AVE=0.667	The form of strong ties between each other. Bonding is connections between kin or close friends, which provide emotional support for individuals (Antheunis, Vanden Abeele, & Kanters, 2015).	I use SNSs to form a closer feeling to someone. On social networks, there is someone I can discuss intimate problems with. There is someone I can turn to for advice about making very important decisions on social networks. There are several people that I trust to help me solve my problems on social networks. There is always someone to chat with on social networks about my day-to-day problems.	(Williams, 2006)
Bridging social capital Alpha=0.834 CR=0.889 AVE=0.668	The form of weak ties. These social relationships provide loose connections for information. (Antheunis, Vanden Abeele, & Kanters, 2015)	Based on the people I interact with on SNSs it is easy for me to find useful information. The people I interact with on SNSs help me keep current on the news. The people I communicate with on SNSs help keep me current with what is new and popular. I like interacting with others on SNSs to learn new things.	(Williams, 2006)

However, private/personal content of messages did not affect weaker relationships; although this was hypothesized to have a negative impact on these relationships, this proved not to be the case. On the other hand, message content that was more informative had a positive influence on weaker social relationships. Further, the more informational content of messages did not influence emotionally closer relationships, suggesting that messages containing mainly information were helpful in enhancing and extending relationships with individuals that were not emotionally close to older adults. On the other hand, the sharing of information in an emotionally close relationship might be expected to have a negative impact on the relationship if the information was withheld.

The results suggest that increasing the social capital of older adults depends on active use of the online medium, and the type of message content

created is dependent on relationships between older adults. The messages sent are more of a personal and private nature for those to whom the individual is close. To increase social connections and create new friendships via SNSs, older adults need to be actively using SNSs. To create and foster weak tie relationships there is a need to be willing to share public information with others.

In comparison, our results differ from some of the previous literature, with our findings being both supportive and different. Similar findings were found in that frequency of communication via SNSs had no influence on the quality or quantity of increasing BRISC (Cotton, Anderson & McCulloch, (2013). Yet, in the same study by Cotton, Anderson & McCulloch (2013) it was found that higher levels of intensity of use increased the level of BOSC for individuals, which differed from our findings. The types of messages consumed or

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created via SNS influenced the relationships in a similar fashion, with information that was public having a positive influence on BRISC, while sharing private information positively influenced BOS (Erickson, 2011). Erickson's (2011) findings differ slightly as they suggested that when older adults consume private information and wish to further discuss this they tend to use another medium to contact the individual, such as face-to-face interaction or phone. Actively seeking out further connections, to increase both BRISC and BOS, and creating a larger breadth of contacts was found to be effectively similar to our findings (Jung & Sundar, 2016).

This research adds to the literature both practically and theoretically. The paper further enriched social capital theory by investigating how the use of SNSs can enhance social capital among the different facets of its use. Several different facets of SNSs use have been identified and their impact on both bonding and bridging social capital have been tested. Our results further expand the understanding of how SNSs influences social capital, as well as how older adults utilize it. Our model has also contributed to a better understanding of the mechanisms of SNSs use that underly its impact on social capital. These results may also be useful in understanding how the use of SNSs influences other forms of psychological wellbeing.

The practical contributions of our work are a greater understanding of how the different facets of SNSs use can influence the social capital of older adults. This knowledge can be used to understand the nuances of how older adults could be using SNSs more effectively to maintain and expand social connections. This knowledge would help those engaged in training older adults to understand how best to utilize SNSs. Furthermore, our results can have an influence over program and policy creation for the betterment of older adults.

Furthermore, the study has shown that the nuances of using SNSs may influence the social capital of an older individual. It also gives a greater understanding of the nuances of the use of SNSs and their influence on the social capital of older adults. The study aids in the explanation of why different studies' changes in social capital due to SNS use have had contradictory results (Quinn, 2016; Blaschke, Freddolino, & Mullen, 2009; Damant et al., 2016).

CONCLUSION

The study found that active participation with others and more individuals in their contact groups tended to increase both forms of social capital. On the other hand, the frequency and duration of use had no effect on older adult social capital. Further, the study established that the more personal messages sent had a positive influence on bonding social capital but had no effect on bridging social capital. But we also found that messages that were of a more public nature positively influenced bridging social capital with no effect on bonding social capital. Overall, this research has been a step in further understanding what components of SNSs usage help increase the online social capital of older adults.

This study has some limitations. The survey population included only older adults living on their own or with family. Many older adults live in retirement homes or assisted living situations, which were not covered in this study. Further study is needed that includes this portion of the population. Furthermore, the various facets of SNSs usage may influence differently the social capital of other age segments of the population, and for populations in different cultures. Some facets of the use of SNSs were not incorporated into the study, such as passive use of the medium, or older adults living with different health and living conditions. These are fertile areas for future research.

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