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Social Networking Sites: Their Users and Social Implications — A Longitudinal Study

Petter Bae Brandtzæg

Social implications of social media

The rapid adoption of social networking sites (SNSs) raises important questions about the social implications of such usage. Drawing on unique longitudinal data, surveying a representative sample of Norwegian online users (N = 2,000, age 15–75 years) in 3 annual waves (2008, 2009, and 2010), this study found a significantly higher score among SNS users in comparison to nonusers in 3 out of 4 social capital dimensions: face-to-face interactions, number of acquaintances, and bridging capital. However, SNS-users, and in particular males, reported more loneliness than nonusers. Furthermore, cluster analyses identified 5 distinct types of SNS users: Sporadics, Lurkers, Socializers, Debaters, and Advanced. Results indicate that Socializers report higher levels of social capital compared to other user types.

Key words: face-to-face interactions, loneliness, social capital, social networking sites, user types

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Introduction

There is currently a strong debate on the social impact of computer-mediated communication (CMC) in general and the usage of social networking sites (SNSs) in particular. An important reason for this debate is that there are no studies that compare nonusers with SNS users. Longitudinal research that covers a broader part of the population is also lacking in this field. In the absence of research findings to report on, the media is forced to report on anecdotal evidence, which fuels “antisocial networking” claims about the negative social implications of SNSs (e.g., *The New York Times*, 2010, April 30). The heavy social cost of using SNSs is also assumed by some academics to be decreased social involvement, less face-to-face interaction, and increased loneliness or isolation (e.g., Morris, 2010; Turkle, 2011). The relevance of this problem is illustrated by Turkle’s (2011) newest book *Alone Together*, which concludes that our social preferences are evolving to include, and in some cases favor, technology over people. As stated by Kraut et al. (1998, p. 1017): “Whether the Internet is increasing or decreasing social involvement could have enormous consequences for society and for people’s well-being.”

In light of the foregoing, the rapid adoption of the use of SNSs (NielsenWire, 2010) raises important questions about the social implications of their usage. However, people can use SNSs in several different ways including accessing information, debating, socializing, or for entertainment (Valenzuela, Park & Kee, 2009). Hence, the usage of such sites differs from person to person, and dissimilar patterns of usage might have different social implications (Brandtzæg & Heim, 2011). The identification of SNS usage has so far relied on users’ interactions on specific SNSs (e.g. MySpace, Flickr, You Tube, Twitter, LinkedIn, or Facebook), or on basic measurements and an understanding of usage in terms of frequency measures

that often use only two possible outcomes (e.g., heavy use or low use). By simply looking at one SNS at a time, we might miss the important fact that SNS usage involves systematic patterns in which the same SNS can be used for different purposes, and different SNSs can be used for the same purpose (Brandtzæg & Heim, 2011). These limitations leave four basic questions unanswered:

- 1 How SNS users compare to nonusers in terms of their social capital
- 2 How to achieve a more precise identification of various usage patterns by means of different user types of SNSs in general, as opposed to a random or continuous distribution of SNS usage across users in a specific SNS
- 3 Whether distinct SNS user types relates to different outcomes of offline social capital
- 4 Whether SNS usage in general and distinct SNS user types in particular show variation over time in their offline social capital

This study addresses these limitations by using a unique and extensive set of longitudinal data from a representative sample of online users ($N = 2,000$, age 15–75 years) in Norway from 2008 to 2010. Norway has an ideal population for studying the social impact of SNSs, given its exceptionally high Internet and SNSs connectivity (Internet World Statistics, 2010). The study compared both the level of social capital among SNS users and nonusers, and the level of social capital among distinct SNS user types. The results will, hopefully, serve as an important contribution to more complete knowledge on how SNS usage in general as well as particular uses of SNSs relates to the formation of social capital over time.

Background

This section briefly describes the most important and relevant research into social capital, the relationship between social capital and the Internet as a whole, and more specifically social capital and SNSs. The user typology approach that was employed in this study to understand various patterns of SNS usage is also described.

Social Capital

There is no single generally accepted definition or operationalization of social capital (Ellison, Steinfield, & Lampe, 2007; Halpern, 2005; Putnam, 2000). This article use an approach to social capital that combines theories formulated by Putnam (2000), Coleman (1988), and Ellison et al. (2007). In short, Putnam (2000) understands social capital as social connections (social networks) and the attendant norms and trust that enable participants to act together more effectively. Coleman (1988) also highlights social networks, relationships, and norms that are advantageous to group members. Ellison et al. (2007) build on both Coleman and Putnam, and investigate the link between SNSs (Facebook) and increases or decreases in social capital. Ellison et al. emphasize that social connections are also resources that are held by individuals. In addition, they claim the importance of SNSs for the formation of weak ties, which serve as the foundation of *bridging social capital*. SNS connections are supported by tools that help individuals to connect and to share experiences in larger social networks, which support loose social ties from which they could potentially draw resources (e.g., Ellison et al., 2007; Donath & Boyd, 2004).

As social capital is both a multilevel and multicomponent concept (see Halpern, 2005), we will in this study limit our focus to the “social network” component of social capital on the individual level: This component examines the urge for sociation, and is understood as the number of connections within and between the different social networks individuals participate in, and how often individuals are

engaging in these connections. We are not focusing on other social capital components such as trust or norms. Hence, social capital is herein defined operationally in terms of the (1) frequency of face-to-face interaction with close friends, (2) number of offline acquaintances, (3) level of bridging capital (or social networks between socially heterogeneous groups), and (4) absence of reported loneliness. The operationalization and theoretical framing of social capital is described in more detail in the section on hypotheses and in the Methods section.

Social Capital and the Internet

Research on how Internet use influences social connectivity offers a variety of perspectives and conclusions (Wang & Wellman, 2010). Table 1 presents data that shows a negative association between Internet usage and face-to-face interactions (see Nie & Hillyegus, 2002). Similarly, using longitudinal data, Kraut et al. (1998) identified decreased communication among family members in a household and concluded that this was caused by Internet usage. They attributed these negative outcomes to a social displacement effect, such that time used on social relationships online displaces offline relationships. However, as shown in Table 1, most recent studies, including a follow-up study by Kraut et al. (2002), suggest that CMC helps people to maintain extant interpersonal relationships both offline and online. This finding is supported by two other reviews of the literature (see Bargh & McKenna, 2004; Tyler, 2002).

Social Capital and SNSs

The results of the main recent studies on how SNS usage relates to social capital are summarized in Table 2. Similar to the results of the Internet usage studies shown in Table 1, the outcomes of the majority of the studies in Table 2 support the notion of increased social capital by using SNSs as a means of CMC.

An inspection of Table 2 shows that mainstream research into SNSs relies on data from college students, nearly all of whom are members of SNSs. For example, influential studies by Ellison et al. (2007) and Steinfield et al. (2008) included mainly Facebook users in their research (94% of the sample). These studies are important for discovering new information about early adopters of Facebook but it is difficult to explain differences related to social implications due to the small number of nonusers in these studies (except in adoption studies of SNSs (e.g., Hargittai, 2007)).

Steinfield et al. (2008) point out that a longitudinal study is warranted in this area as it can help answer questions about whether or not greater use of SNSs leads to greater social capital, and how social capital develops over time. Previously there has been only one longitudinal study (see Steinfield et al., 2008). In addition, the majority of studies so far have focused solely on Facebook or certain types of SNSs, not on how people use SNSs in general. Most SNS users are members of and use more than two SNSs (Brandtzæg & Heim, 2011; Hargittai & Hsieh, 2010). However, Ellison et al. (2007) and Steinfield et al. (2008) contributed to a more accurate understanding of SNS usage in their “Facebook intensity scale.” But while the main purpose of the “Facebook intensity scale” is to map attitudes towards Facebook in particular, our approach mapped different types of actual user behavior on a variety of SNSs.

SNSs – A User Typology Framework

This study applied a typology approach based on the *Unified Media User Typology* developed by Brandtzæg (2010), to achieve a better differentiation between qualitative aspects of a certain type of use (e.g., entertainment use, instrumental use, social use, etc.). The combination of data about frequency of use and different activity data within SNSs allows a deeper and more precise examination of the relationship between specific SNS usage and social capital, which is rare. In general, we expected to find the following five SNS user types, suggested by Brandtzæg (2010): 1) Sporadics (low level users

Table 1 Overview of studies relevant to our understanding of Internet use and social capital

Study	Sample	Method	Results
Kraut et al., 1998	93 Pittsburgh families: $N = 335$	Longitudinal research, data logging and two survey periods: 1995–1996 (US)	Negative effects on family interaction, social involvement, and psychological well-being
Wellman, Quan Haase, Witte, and Hampton, 2001	Visitors to the National Geographic Society Web site: $N = 39,211$	Web survey, 1998 (mainly US, but also international users)	Online interaction supplements face-to-face communication without increasing or decreasing it. Positive effect on social involvement for heavy users
Nie and Hillygus, 2002	Total sample: $N = 6146$ (18–63 years). Non-users, $n = 5388$, Online users, $n = 757$	Survey and logging of online activity, 2001 (US)	Negative impact on time spent with friends, family, and social activities
Kraut et al., 2002 (follow up, Kraut et al., 1998)	93 Pittsburgh families: $N = 202$	Longitudinal research, survey, and logging in three periods: 1995–1998 (US)	Positive effects on social involvement and well-being
Kavanaugh, Carroll, Rosson, Zin, and Reese, 2005	Random sample of households with Internet access Wave 1: $N = 156$ Wave 2: $N = 143$	Longitudinal survey data on community computer networking in 2001 and 2003 (US)	Support face-to-face interaction, community engagement, and attachment
Wang and Wellman, 2010	$N = 2000$, households (25–74 years)	Longitudinal, representative sample in two periods 2002 and 2007 (US)	Increasing friendships, both offline and online
Tillema, Dijst, and Schwanen, 2010	$N = 742$ (not representative, only employed households)	Measured the relationship between electronic communication and face-to-face interaction in 2007 (Netherlands)	Frequency of face-to-face interactions is positively correlated with electronic communication

Table 2 Overview of studies relevant to our understanding of SNSs and social capital

Study	Sample	Method	Results
Ellison et al. 2007	Undergraduate students, 94% were Facebook users: $N = 286$	Online survey of Facebook use in 2006 (US)	SNS use strongly associated with maintaining relationships, bonding, and bridging social capital, as well as improving well-being
Steinfeld, Ellison, and Lampe, 2008 (follow up of Ellison et al., 2007)	Facebook users/university undergraduate students. Panel sample 2006 and 2007: ($N = 92$). Random sample 2006: $N = 286$. Random sample 2007: $N = 481$	Two surveys conducted in 2006 and 2007, and in-depth interviews with 18 Facebook users (US)	SNS use confers greater maintained social capital and greater bridging social capital
Subrahmanyam, Reich, Waechter, and Espinoza, 2008	University students: $N = 110$ (18–29 years), from Los Angeles	Laboratory survey and online survey of Facebook and MySpace use (US)	Bonding with existing friends, 1/3 to seek out new friends. Few report problems from SNS-usage
Valenzuela et al., 2009	College students, mainly Facebook users: $N = 2,603$ (18–29 years)	Online survey of Facebook use and social capital (US)	A small, but significant association between Facebook use and students' social trust, civic engagement, and political engagement
Barkhuus & Tashiro, 2010	Facebook users: $N = 18$ (19–23 years). Snowball sampling	Interviews and short self-report diaries of Facebook use, 2009 (US)	Facebook use encourage peripheral friendships (bridging capital)
Brandtzæg, Lüders, and Skjetne, 2010	Random sample of Facebook users: $N = 16$ (16–64 years)	In-depth interviews and user test of Facebook, in 2009/2010 (Norway)	Supporting bonding and bridging capital. More contact with family, friends, and acquaintances

of SNS), 2) Lurkers (people who use SNSs, but do not contribute or interact), 3) Socializers (people who use SNSs mainly for social interaction with friends and family), 4) Debaters (people who use SNSs mainly for debating and discussion), and 5) Advanced (people who use SNSs frequently for almost all purposes, such as socializing, debating, and contributing). These types differed significantly from each other in terms of user activities, breath of user activities, and social roles within SNSs. However, there was no gradient relationship between distinct user types, because there was some degree of overlap, but each user type has some distinct characteristics. Advanced Users are most dissimilar from Sporadics and Lurkers, but may engage in several activities within SNSs in which Socializers and Debaters also engage.

Research Objectives and Hypotheses

Objectives

The research objective of this study was twofold: First, to determine how nonusers and SNS users differ in social capital dimensions of 1) informal sociability, 2) absence of loneliness, and 3) bridging capital, and how this changed over time from 2008 to 2010. Second, to determine how various user types of SNSs differ in their level of social capital. The latter assumes the achievement of two subgoals: a) to identify a typology of SNS users, and see how this changes over time, b) to investigate how the different SNS user types score on the social capital dimensions listed above, also from 2008–2010.

Hypothesis

Informal sociability - Social contact with close friends and the size of offline social network

While SNSs might facilitate interaction between people and strengthen existing close social ties (boyd & Ellison, 2007), there is also a concern that new technologies increasingly privatize our leisure time and undermine face-to-face community ties (Kraut et al., 1998). However, judging from the results of earlier research on SNSs, summarized in Table 2, we expected in particular that Socializers would have more frequent face-to-face interaction than other user types, suggesting a “rich get richer” effect. In addition, people will receive more information about their friends—where they are and what they are doing—by using SNSs. Therefore, we also expected that SNS users would have more frequent contact than nonusers. On this basis, we formulated the following hypotheses:

H1a: *SNS users have more face-to-face interactions with their close friends than nonusers.*

H1b: *Socializers have more face-to-face interactions with their close friends than Sporadics and Lurkers.*

H1c: *The average face-to-face contact among SNS users will have increased from 2008 to 2010.*

As assumed by Ellison et al. (2007), the early work on how online and offline networks relate to each other may not apply to current SNSs. According to boyd and Ellison (2007), SNSs create a unique type of online community as they enable users to articulate and visualize real-life social networks. The primary goal is not to make new connections (as in older online communities), but to nurture existing ones. In line with the research reviewed in Table 1 and 2, we expected that SNSs would be positive related to offline social networks. We therefore hypothesized the following:

H2a: *SNS users have more acquaintances offline than nonusers.*

H2b: *Debaters and Socializers have a higher number of acquaintances offline than Lurkers and Sporadics.*

H2c: *The average number of acquaintances offline among SNS users will have increased from 2008 to 2010.*

Loneliness

Turkle's (2011) new book “*Alone Together*” (mentioned in the Introduction) indicates that SNSs could contribute to differences in the experience and conceptual representations of loneliness and connectedness. With respect to the theoretical approach adopted in our study, social capital was defined in terms of the negation of social isolation and loneliness (Wacquant & Wilson, 1989). Thus, loneliness is viewed as the perception of a lack of network and social support (Weiss, 1975). Based on this and the

results of recent research, as summarized in Table 1 and 2 (e.g. Wang and Wellman, 2010), we expected the following:

H3a: *SNS users experience less loneliness than nonusers.*

H3b: *Socializers experience less loneliness than other SNS user types.*

H3c: *Loneliness among SNS users will decrease over time* (based on data collected from 2008 to 2009; loneliness was not measured in 2010).

Bridging capital

In the literature on social capital, an important distinction is made between bonding and bridging capital (Putnam, 2000). Bridging capital is related to the social diversity or the weak ties to which one has access, whereas bonding is correlated to the strong ties to which one has access (e.g., family and close friends). It is likely that, in general, outward-looking individuals (like SNS users) have more bridging capital than inward-looking individuals (nonusers). Steinfield et al. (2008) and Ellison et al. (2007) found that their Facebook users reported having greater bridging social capital. In light of this, we formulated the following hypotheses:

H4a: *SNS users have greater bridging capital offline than nonusers.*

H4b: *Advanced Users, Socializers, and Debaters have greater bridging capital than other user groups.*

H4c: *Bridging capital among SNS users will have increased from 2008 to 2010.*

Method

This study used a longitudinal research design consisting of three survey waves (2008, 2009, and 2010) to assess the social implications of SNS usage.

Sample and Timeline

The sample, the relevant characteristics of which are presented in Table 3, is representative of the online population in Norway in the 15- to 75-year age group, gender, and education.

The sample was recruited by Norstat (2010), a professional marketing and user research firm that hosts a wide ranging online panel of users (350,000 in 2010), using various means (including telephone, websites, newsletters, and face-to-face surveys). Norstat sent all participants an invitation via e-mail to participate in the online survey. As a rule, Norstat compensates panelists with 1 point (comparable in value to \$0.15) per minute of an estimated interview length. The surveys were executed according to Norwegian law and ethical considerations (see www.esomar.org and Norstat, 2010).

The first data collection was conducted in May-June 2008, with the initial 2,000 participants completing the survey (the response rate was 71%). The second wave was in May-June 2009 with 1,372 participants (of the original 2,000 participants), which represents a response rate of 69% relative to the original sample. In the last wave, in June 2010, 708 people responded, representing a 35% response rate relative to the original sample. Such a large dropout rate is expected in longitudinal survey studies (Kraut et al., 2002).

A cross-data consistency check with another ongoing investigation from TNS Gallup (www.tns-gallup.no) showed the same numbers of weekly usage of both Twitter and Facebook across all three waves (Brandtzæg & Lüders, 2009), varying by only 2% on certain measurement points. Comparing

Table 3 Complete sample characteristics (%)

Year	2008	2009	2010	SNS users all three waves
Sample size	<i>N</i> = 2,000	<i>N</i> = 1,372	<i>N</i> = 708	<i>n</i> = 391
Age				
15–30	19	19	15	31
31–40	19	21	22	35
41–50	19	21	19	17
51–60	21	18	18	11
61–75	22	22	26	6
Gender				
Male	50	49	51	56
Female	50	51	49	44
Education				
Primary school	8	5	5	5
High school	36	32	28	32
University	54	61	67	63
Other	2	1	1	1
Students	21	19	17	32
SNS users	58	66	79	100

Note. The last column to the right shows the SNS users that responded in all three waves (2008, 2009, and 2010).

the data made it possible to ensure that our data was reliable, and that our dropout rate only minimally affected the consistency of the data. The general data from TNS Gallup Q1, Q2, Q3 (2008, 2009, and 2010) can be viewed online (<http://www.tns-gallup.no/?did=9097056>), and more information about this longitudinal survey can be found in Brandtzæg (2012).

Measures

All measures were included in the questionnaire in all three waves, except for the loneliness scale (included only in wave 1 and 2). The self-reported online questionnaire included questions covering different dimensions of social capital as well as frequency of use and various user activities to identify distinct SNS user types. In addition, we collected information on age and gender to include in three-way ANOVA tests.

Demographic factors

Age (see age-group coding in Table 3) and gender were used as independent variables as well as user types, as this allowed us to test for possible interaction effects.

Separating non-users from SNS users

We asked the following question: “Are you using any social networking sites, such as MySpace or Facebook?” (“yes” or “no”).

SNS user types

We used 32 different usage variables (see Appendix, Table 1A). As a basis for creating the clustering variables, we consulted previous research and a review of several other studies that identified different

media user types in general and SNS user types in particular (see Brandtzæg, 2010; Brandtzæg & Heim, 2011). The use of many clustering variables is expected to maximize the likelihood of discovering meaningful differences (Ketchen & Shook, 1996), as well as capturing statistically and theoretically important clusters. All the cluster variables were rated in respect to frequency of use on a 4-point scale, from (1) “Never, almost never” to (4) “Daily.”

Informal sociability offline

Following the conceptual framework of Putnam (2000), we first measured the frequency of face-to-face interaction with close friends, rated on a 6-point scale from (1) “Never” to (6) “Daily” (see Tillema et al., 2010). The second item was how many acquaintances the participants reported having in total, rated on a 10-point response scale from (1) “five friends” to (10) “1,000 friends.”

Loneliness

Five items from the Revised UCLA Loneliness Scale (Russel et al., 1980) were included: 1) I feel in tune with the people around me, 2) No one really knows me well, 3) There are people I can turn to, 4) I feel left out, and 5) I have difficulties in making friends. Items 1 and 3 were recoded, following Russel et al. (1980). All items were rated on a 4-point scale, ranging from (1) “Never” to (4) “Always” (Alpha reliability: 2008 = 0.752, 2009 = 0.743).

Bridging capital

We used five items adapted from Pajak (2006): “A tool for measuring bridging social capital.” We asked how many people they know in their group of acquaintances who 1) “have another political view from me,” 2) “read different magazines, newspapers, and books than I do,” 3) “have a different cultural background or race from me,” 4) “value different kinds of music and television programs than I do,” and 5) if they are “interested in persons that have a different lifestyle from themselves.” The items were rated on a 5-point Likert scale, ranging from (1) “Strongly disagree” to (5) “Strongly agree” (Alpha reliability: 2008 = 0.704, 2009 = 0.744, 2010 = 0.723).

Analysis

The data was analyzed in four stages (as illustrated in Table 4) reflecting the different hypotheses outlined above. Before performing the analysis, preliminary assumptions were tested. Normality of distribution was assessed by using Mahalanobis distances (Tabachnick & Fidell, 2007). Homogeneity of variance was assessed by the Levene test. We also checked for possible multicollinearity among the dependent variables.

As shown in Table 4: to enable a measure of change over time in user types in respect to social capital (see Figure 2), we included the user types developed in 2008 in the analysis. Hence, the analysis will not be able to take into account the change in user types over the three annual waves as shown in Figure 1, but rather how user types in 2008 links to social capital in 2009 and 2010. The observed mean for each year taking account for the change also in user types are illustrated in Table 7.

Results

Cluster Analysis – SNS User Types

A five-cluster solution was calculated and proved to be a good option. This solution was benchmarked against four- and three-cluster solutions. The five clusters were interpreted based on inspection of the mean scores (Appendix, Table 1) and finally compared and validated with those obtained in previous

Table 4 Overview of statistical analysis used in this study

Part of sample	Statistical analysis	Variables	Goal
Total sample of SNS users from 2008 to 2010	<i>K</i> -means cluster analysis	32 questions (cluster variables) covering various SNS usage behavior	Identify SNS user types
Nonuser and SNS users: 2008, <i>N</i> = 2,000; 2009, <i>N</i> = 1,372; 2010, <i>N</i> = 708	Three-way ANOVA test, with post hoc comparison on age groups (and <i>t</i> -test when necessary)	Nonusers, SNS users, age, gender, informal sociability, loneliness, bridging capital	Compare the social capital among nonusers and SNS users
Only users that reported use of SNS from 2008 to 2010, <i>n</i> = 391 and nonusers	Three-way ANOVA test, with post hoc comparison on user types	Age, gender, user types, informal sociability, loneliness, bridging capital	Compare different SNS user types in terms of social capital
User types including nonusers in 2008, <i>n</i> = 623	Repeated measure ANOVA (mixed model)	Informal sociability, loneliness, bridging capital and user types	Examine SNS user types and social capital over time

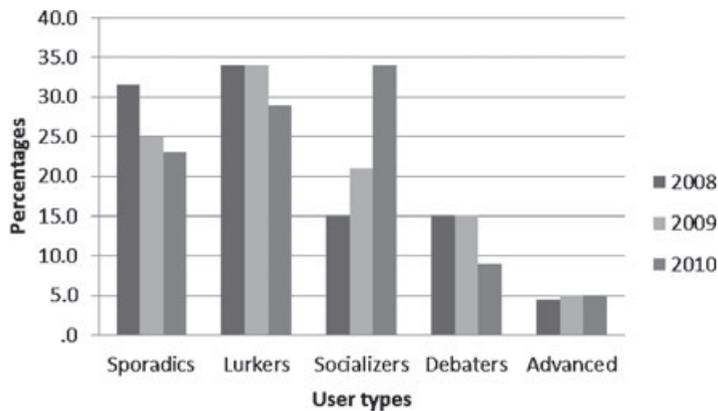


Figure 1 User types in SNSs in three waves (filter *n* = 391)

research (Brandtzæg, 2010; Brandtzæg & Heim, 2011). The following five types of SNS users were identified:

- C1/user type 1 - Advanced Users: The mean scores of this user type are generally the highest in almost all of the clustering variables, indicating both frequent usage and a very diverse and broad SNS behavior. These users were therefore termed “Advanced Users.”

- C2/user type 2 - Debaters: These users have the second highest mean scores (after the Advanced Users) in contributing activities such as uploading content and writing contributions. They are also highly active in discussions and debating.
- C3/user type 3 - Socializers: The mean scores of this cluster are mainly high in socializing activities with friends, family and others within SNSs. Social interaction is of primary importance for these users. As a result, the cluster was named “Socializers.” These users have a low mean score on “Discussion/debating” and “Follow discussion,” and are somewhat less involved than Debaters and Advanced Users in both frequency of use and content contribution.
- C4/user type 4 - Lurkers: People in this category use SNSs on a regular basis, but less frequently than the other SNS user types, except Sporadics. They report use of SNSs mainly in accordance to the following variables: “time-killing,” “look at photos,” “find information about friends,” and “see if somebody has contacted me,” all related to passive consumption of others contributions within the SNSs. These were therefore termed “Lurkers.”
- C5/user type 5 - Sporadics: People in this category are very close to nonusers of SNS, as they only connect occasionally to check whether somebody has been in touch with them. In the other clustering variables, they mainly score “never or almost never” and are the only group with less frequent use than Lurkers.

Figure 1 shows that the number of Advanced Users was stable over time. However, the categories of SNS users were not fixed. The most notable phenomenon is that the number of Socializers increased

Table 5 Mean (M) and standard deviation (SD) of measures of social capital comparing nonusers and SNS users from 2008 ($N = 2,000$) to 2009 ($N = 1,372$) and 2010 ($N = 708$). Statistically significant values for repeated measures ANOVA are presented in bold. The mean difference is significant at the 0.05 level

	Non-users M (SD)	SNS users M (SD)	SNS users* M (SD)
Informal sociability			
<i>Face to face interaction with close friends</i>			
2008	4.39 (1.0)	4.73 (1.0)	4.57 (0.5)
2009	4.37 (1.0)	4.61 (1.0)	4.53 (1.0)
2010	4.25 (0.5)	4.50 (1.0)	4.52 (0.5)
<i>Number of acquaintances</i>			
2008	4.87 (1.7)	5.46 (1.9)	5.30 (2.0)
2009	4.94 (1.8)	5.48 (1.9)	5.37 (2.0)
2010	5.03 (1.7)	5.47 (1.9)	5.56 (2.1)
Loneliness			
2008	9.41 (2.2)	9.51 (2.5)	9.76 (2.5)
2009	9.73 (2.1)	9.86 (2.3)	10.13 (2.5)
2010	n/a	n/a	n/a
Bridging capital			
2008	19.28 (2.7)	19.82 (3.0)	19.79 (3.0)
2009	19.38 (2.6)	20.16 (2.7)	20.22 (2.7)
2010	19.54 (2.8)	19.97 (2.7)	20.05 (2.8)

Note.* = SNS users in all three waves ($n = 391$); - n/a = not applicable.

from 15% to nearly 35% of users, and that Sporadics, Lurkers, and Debaters all decreased in number. The two latter groups decreased mainly from 2009 to 2010.

Comparing Nonusers and SNS Users

Table 5 shows the results in terms of mean size of different measures of social capital comparing nonusers and SNS users across the three waves. A repeated measure of ANOVA among SNS-users (all three periods, $n = 391$) did not indicate an increase in face-to-face interaction (rejecting H1c), but showed a significant increase in the number of acquaintances (supporting H2c) (though there was also an increase among nonusers), loneliness (rejecting H3c), and bridging capital (supporting H4c). Bridging capital did not show a significant increase from 2009 to 2010. (See for more information about change over time in Figure 2 and 3).

A three-way ANOVA test, using three independent variables (gender, age, and user typology), allowed us to determine whether the means of different groups are statistically different, and at the same time to cross-check the interaction effects with gender and age. Table 6 shows how SNS users relate to various dimensions of social capital. Partial eta squared describes the effect size. The interpretation of effect sizes in Table 6 is mostly small, in agreement with the specified guidelines proposed by Cohen (1988).

Table 6 shows that “Face-to-face” interaction had an interaction effect with both SNS usage and age group in 2008 and in 2010. A post hoc test indicated that the 15–30 years age group reported significantly more “Face-to-face interaction” than other age groups. In 2009, SNS usage had a main effect on all social capital dimensions, except “loneliness.” In 2010 there was no association between SNS usage and “bridging capital,” rejecting H4a. Table 6 also reports that SNS users are lonelier than nonusers and that male users were significantly lonelier than female users in both 2008 and 2009. In addition, female nonusers were lonelier than female SNS users. This latter effect was already apparent among the younger age group (15–30 years) in 2008. On the other hand, male users’ level of loneliness increased from 2008 to 2009, while female nonusers’ loneliness increased in the same period. The gender difference related to loneliness was also the most striking gender difference in the data material.

Comparing different SNS User Types

Table 7 shows the mean differences in SNS user types across the three time periods.

To investigate if being a distinct user type or nonuser in 2008 predicts the social capital outcome in 2009 and 2010, a repeated measure was performed. Some part of these results is presented in figure 2 and 3. Sporadics and nonusers are the user types with lowest social capital, while Socializers and Advanced have the highest. First, face-to-face interaction is not showing any significant main effect in regard to time (reject H1c). But, as shown in Figure 2, there was a small but significant main effect for time in respect to “number of acquaintances,” Wilks’ lambda = .98, $F(2,70) = 7,03$, $p < .001$, partial eta squared = .020, with Debaters and Advanced showing an increase in “number of acquaintances.” The main effect comparing the user types, was significant, $F(5,70) = 7,37$, $p < .001$, partial eta squared = .050 (small/moderate effect), suggesting differences in how various user types relates to informal social capital.

As shown in Figure 2, Socializers report greater “bridging capital” over time, but there is no increase from 2009 to 2010 in this group, while this was the case for nonusers. However, there was no significant main effect in regard to time (rejecting H3c).

Finally, there was found a small but significant main effect for time in respect to “loneliness,” Wilks’ lambda = .98, $F(1,12) = 29,27$, $p < .001$, partial eta squared = .022, with Sporadics, Debaters and

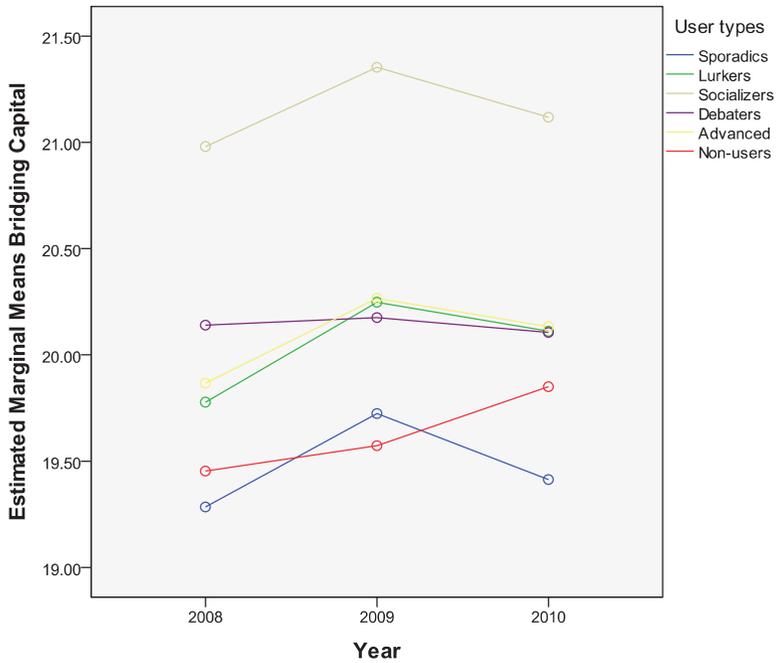
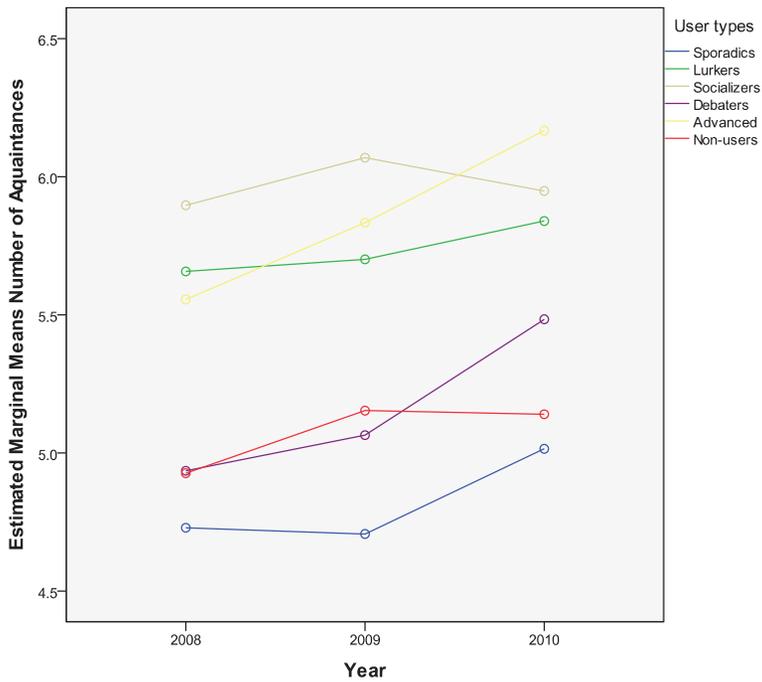


Figure 2 and 3 The connection between different user types in predicting “number of acquaintances” and Bridging capital using 2008 user types ($n = 623$)

Table 6 Three-way ANOVA results of measures of social capital comparing nonusers and SNS users from 2008 to 2010

Results per year

2008

Face-to-face: Significant interaction effect of age group and SNS usage $F(4,196) = 4.56$, $p = .004$, partial eta squared = .012. Younger people (age 15–30 years) are interacting face-to-face significantly more often in comparison to older age groups (partly supporting H1a).

Number of acquaintances: Significant main effect of SNS usage $F(1,198) = 8.94$, $p = .003$, partial eta squared = .004. Interaction effect between age group and SNS use $F(4,198) = 4.28$, $p = .002$, partial eta squared = .009 (supporting H2a).

Loneliness: Significant interaction effect of SNS usage and age, $F(4,191) = 2.49$, $p = .041$, partial eta squared = .005. Interaction effect between gender and age $F(4,191) = 2.97$, $p = .018$, partial eta squared = .006. Younger people (age 15–30 years) are significantly more lonely than older age groups ($p = 0.20$). Independent-samples t -test confirmed that male SNS users are significantly (two-tailed) more lonely than female SNS users [$t(2.985) = 355.0$, $p = .003$] (rejecting H3a).

Bridging capital: Significant main effect of SNS usage $F(1,186) = 15.07$, $p = .003$, partial eta squared = .008 (supporting H4a).

2009

Face-to-face: Significant main effect of SNS usage, $F(1,130) = 6.93$, $p = .008$, partial eta squared = .005 (supporting H1a).

Number of acquaintances: Significant main effect of SNS usage $F(1,130) = 12.07$, $p < .001$, partial eta squared = .009 (supporting H2a).

Loneliness: Significant interaction effect with gender and SNS usage $F(1,124) = 7.36$, $p = .007$, partial eta squared = .006. Males are lonelier when they are SNS users, while females are lonelier when they are nonusers (rejecting H3a).

Bridging capital: Significant main effect of SNS usage $F(1,222) = 30.77$, $p < .001$, partial eta squared = .025 (supporting H4a).

2010

Face-to-face: Significant interaction effect of age group and SNS usage $F(4,688) = 2.94$, $p = .020$, partial eta squared = .017. Younger people, in the age group of 15–30 years, have more frequent face-to-face interaction in comparison to other age groups (supporting H1a).

Number of acquaintances: Significant main effect of SNS usage $F(1,688) = 21.01$, $p < .001$, partial eta squared = .030 (supporting H2a).

Loneliness: Not measured in 2010 (n/a).

Bridging capital: No effect.

Note. The direction of the main effects indicates that SNS users had a higher level of social capital than nonusers. In addition to a three-way ANOVA, a t -test was also used when necessary. Post hoc comparison = Tukey HSD test (significant at the .05 level).

Table 7 Mean (*M*) and standard deviation (*SD*) of social capital when comparing SNS user types across three time periods (*n* = 391). Significant differences between highest and lowest *M* for each year are highlighted in bold (three-way ANOVA and post hoc)

	Sporadics <i>M (SD)</i>	Lurkers <i>M (SD)</i>	Socializers <i>M (SD)</i>	Debaters <i>M (SD)</i>	Advanced <i>M (SD)</i>
Informal sociability					
<i>Face-to-face interaction with close friends</i>					
2008	4.33 (1.0)	4.61 (1.0)	4.84 (0.9)	4.65 (1.1)	4.88 (1.0)
2009	4.26 (0.9)	4.66 (1.1)	4.81 (0.8)	4.53 (1.1)	4.65 (0.8)
2010	4.33 (0.9)	4.44 (1.0)	4.69 (0.9)	4.55 (0.9)	4.44 (1.2)
<i>Number of acquaintances</i>					
2008	4.77 (1.9)	5.64 (1.8)	5.90 (2.0)	4.92 (2.4)	5.76 (1.8)
2009	4.81 (1.8)	5.37 (1.9)	5.71 (2.0)	5.72 (1.8)	5.65 (1.6)
2010	5.10 (2.2)	5.27 (2.1)	5.93 (2.0)	6.13 (1.5)	5.55 (2.2)
Loneliness					
2008	10.04 (2.2)	9.37 (2.5)	9.72 (2.7)	9.94 (2.6)	10.12 (2.7)
2009	10.37 (2.3)	9.98 (2.5)	9.66 (2.4)	10.46 (2.8)	11.15 (2.5)
2010	n/a	n/a	n/a	n/a	n/a
Bridging capital					
2008	19.08 (2.9)	19.58 (2.5)	20.80 (3.3)	20.22 (3.3)	19.53 (3.9)
2009	19.77 (2.9)	19.94 (2.6)	20.61 (2.7)	20.57 (2.5)	20.15 (3.1)
2010	19.34 (2.5)	19.82 (2.8)	20.71 (2.6)	20.21 (2.8)	19.76 (3.7)

Note. Based on observed means. The mean differences are significant at a .05 level; n/a = not applicable.

Advanced showing a increase in “loneliness.” The main effect comparing the user types, was significant, $F(5,12) = 4.48, p < .001$, partial eta squared = .017, suggesting a small effect in how various user types correlate with “loneliness.” Loneliness is related to Debaters and male Advanced Users, while passive users like Sporadics and Lurkers are more similar to nonusers.

Lastly, a three-way ANOVA (age, gender, and user types) test was conducted to investigate the differences in SNS user types for various forms of offline social capital in each year. We analyzed a limited portion of SNS users (*n* = 391) who reported use of SNS in all three waves (2008, 2009, and 2010). The results are presented in Table 8. In general the specific user types clearly relates to differences in offline social capital outcome. Socializers, in particular, report more social capital.

Discussion

Previous debates on the social implications of SNS use have not yielded definitive conclusions in respect to the social costs and benefits. The findings in this unique longitudinal study demonstrate a significantly higher score among SNS users on three out of four dimensions of social capital (face-to-face interaction, number of acquaintances, and bridging capital) in three points of time (2008, 2009, and 2010), except for the difference in bridging capital, which was not significant in 2010. The message of this result seems simple: SNSs is associated to social capital and might strengthening social bonds as SNSs give free and easy communication with family, friends, and acquaintances regardless of time and

Table 8 Three-way ANOVA results on measures of social capital comparing five SNS user types in three waves (2008-2009-2010)

Results per year

2008

Face-to-face: Main effect of age group $F(4,345) = 5.26, p < .001$, partial eta squared = .057, not the typology (H1b rejected). A post hoc comparison showed that Advanced Users and Socializers have significantly higher levels of face-to-face interaction than Sporadics (H1b partly supported).

Number of acquaintances: Significant main effect of SNS user typology $F(4,346) = 2.73, p = .029$, partial eta squared = .031. A post hoc indicated that Socializers reported a significantly higher mean score ($p = .002$) than Sporadics (H2b partly supported).

Loneliness: Significant interaction effect of typology, gender, and age $F(22,28) = 1.73, p = .022$, partial eta squared = .169. Post hoc indicated that Lurkers experience significant less Loneliness than other groups ($p = .030$). Male users are lonelier than females (H3b rejected).

Bridging capital: Significant main effect of typology $F(4,325) = 3.92, p = .004$, partial eta squared = .047. A post-hoc demonstrated that Socializers ($p = .004$) have more bridging capital compared to Sporadics (H4b partly supported).

2009

Face-to-face: Significant main effect of user typology $F(4,341) = 2.40, p = .050$, partial eta squared = .027. A post hoc test indicated that Socializers have significantly ($p < .001$) more face-to-face interaction than Sporadics (H1b supported).

Number of acquaintances: Significant main effect of user typology $F(4,842) = 5.41, p = .000$, partial eta squared = .025. A post hoc showed that Debaters was significantly ($p = .002$) higher than for Sporadics, and Socializers were significantly higher than Sporadics ($p < .001$) (H2b partly supported).

Loneliness: Significant main effect of gender $F(1,327) = 7.45, p = .007$, partial eta squared = .022, not typology (H3b rejected).

Bridging capital: Significant main effect of typology $F(4,787) = 5.91, p = .021$, partial eta squared = .015. A post hoc test indicated that Socializers was significantly higher than among Sporadics, $p = .010$ (H4b partly supported).

2010

Face-to-face: Significant interaction effect with user typology and gender $F(4,342) = 3.79, p = .005$, partial eta squared = .042. In addition, a significant interaction effect between the user typology and age was observed $F(15,34) = 2.36, p = .003$, partial eta squared = .094. A post-hoc test indicated a significant higher mean score among Socializers and younger people (15–30 years) (H1b supported).

Number of acquaintances: Significant interaction effect of all three independent factors: user typology, age, and gender $F(1,432) = 1.78, p = .040$, partial eta squared = .068. Debaters have more acquaintances than Sporadics ($p = .034$) and Lurkers ($p = .041$) (H2b partly supported).

Bridging capital: Two significant interaction effects: 1) user typology and age $F(15,32) = 1.71, p = .009$, partial eta squared = .089, and 2) user typology, age, and gender $F(13,32) = 2.09, p = .014$, partial eta squared = .077. Post hoc comparison showed that younger users (15–30 years) have significantly more bridging capital than other age groups, and Socializers significantly more than Lurkers ($p = .011$) and Sporadics ($p < .001$) (H4b supported).

Note. Post hoc comparison using the Tukey HSD test is significant at the .05 level. The mean differences in various user types are reported in Table 7.

place. In this respect, the results in this study are similar to Ellison et al. (2007) which demonstrated a connection between Facebook usage and indicators of social capital. However, the effect sizes in this study was relatively small, thus the association of general SNS usage in respect to social capital is limited. Age also plays a role when explaining face-to-face, where younger people often have more face-to-face interaction than older age groups.

Examining the results in light of the current media debate, they do not support the anxiety about “antisocial networking” or low social involvement. SNSs communication does not seem to replace intimacy or face-to-face interaction. In fact - SNS users are actually more likely to socially interact face-to-face and report more social capital compared to nonusers. This is in line with most other research on this topic, as presented in Table 2. But despite the increasing interconnections among SNS users they, surprisingly, report more loneliness than nonusers, and this is particularly evident for males associated to Advanced Users or Debaters. This seems to be a contradiction, since these user types show higher scores in the three other social capital dimensions. However, both Advanced and Debaters are likely to spend more time on SNSs than other user types and previous findings on younger advanced media users correspond with our findings, suggesting a low self-image due to the negative stereotyping of a heavy “nerd” computer user (Heim, Brandtzæg, Kaare, Torgersen, & Endestad, 2007). This association tends to be more of a problem for males due to traditional gender roles. Similarly, there is negative stereotyping that heavy SNS users are male, lonely, attention-craving individuals (e.g. *The New York Times*, 2010, April 30). Hence, heavy SNS usage for males seems to amplify feelings of loneliness. Loneliness among males may also be due to less meaningful relations in SNSs. Females, on the other hand, may enable a greater balance offline and online connections, and are also more skilled in social bonding online. For example, research on cell phone use (SMS) has found that males most often send simple one sentence messages, while females often have a broader register in their text communication, also for the more emotional side (Ling, 2005; Kaare et al., 2007). In general, SNS usage seems to be a much more important tool for socializing among females in comparison to males; therefore, being outside SNSs may have a socially excluding effect on females but not on males. According to a large-scale adoption study in the US, females are more likely to use SNSs than their male counterparts (Hargittai, 2007). This gender skew is also confirmed in this study: Females use SNSs more frequently and interact more socially than males.

On a general level, the findings in this study are somewhat similar to the findings of both Ellison et al. (2007) and Steinfield et al. (2008). These two studies suggested that the use of Facebook enhanced weak ties or bridging social capital. However, “bridging capital” differences can be explained by this study as a “rich get richer” effect that is related to a specific usage pattern, namely that of Socializers, for whom social interaction is of primary importance. The results suggest a strong connection between Socializers and social capital benefits. Sporadics and Lurkers, with less social interaction on SNSs, report also less social capital than other user types. In this respect Sporadics are similar to nonusers. However, the level of Socializers’ “bridging capital” was not increasing from 2009 to 2010 (see Figure 3). Socializers in general had greater social capital, but they are not expanding their social network over time. This more narrow type of networking from 2009 to 2010 might be explained by a cognitive limit to the number of people with whom one can maintain committed relationships. According to “Dunbar’s number,” we are only able to keep up with 150 friends over time (Dunbar, 1996). People may be stressed by too many connections, and thus not willing to increase their weaker ties over time. An exception is Debaters and Advanced Users, who showed a significant increase in their number of acquaintances from 2008 to 2010 (see Figure 2), probably because of their discussion, debate, and active engagement in creating meetings with new people in SNSs. Surprisingly, nonusers increased their “bridging capital” over time (see Figure 3), this tell us there are several individual differences which is not measured in this study that may affect SNS use and social benefits related to that use.

To examine if SNS usage relates to social capital, the findings of the hypotheses H1c, H2c, H3c and H4c can be summarized. As shown above, “bridging capital” and “face-to-face” is not correlated by SNS usage, while this is true for the “number of acquaintances” and loneliness, but the effect size is rather small. The results is therefore somewhat contradictory to Steinfield et al. (2008) which found a unique contribution of SNSs in respect to bridging capital, also over time. However, the measurements and sample in this U.S. study was different from the present study herein, which hamper a valid comparison between these two studies.

This study has shown how user types in SNSs can be identified and understood in the SNS population, and that various types shows different social capital. The results often demonstrate a greater effect size in regard to user types than in the comparison between nonusers and SNS-users. Socializers, in particular, differ from other user groups in regard to the number of offline acquaintances and bridging capital. Interestingly, and as previously discussed, Advanced Users and Debaters tend to be more lonely. A clearer future understanding of the mechanisms through which SNS user type influences by social involvement or loneliness might assist SNS design and suggest policies to avoid negative effects and support socializing user type patterns. The user types identified in this study, however, contribute to our understanding of a digital divide in SNSs. According to Van Dijck and Nieborg (2009), research on web 2.0 applications, such as SNSs, is often confronted with the misconception that all users are equally creative and active. However, SNSs demand new processes, skills, and capabilities to participate in the networked society, but here only a minority of 5% can be considered as Advanced Users, while 52% (in 2010) were either identified as Sporadics (23%) or Lurkers (29%) (see Figure 1). This participation inequality in SNSs indicates a new digital divide, where the majority of the user population has low interest, or user skills required. Furthermore, this research also contributes to a more precise understanding of the characteristics and behavior of SNS users, which also expands our understanding of different social roles and motivations among individual within SNSs. In this respect, by using a cluster analysis on 32 user variables, we not only identified the extent to which people are using SNSs, but also how broadly they are using them. The five different user types identified: 1) Sporadics, 2) Lurkers, 3) Socializers, 4) Debaters, and 5) Advanced Users, provides empirical justification for Brandtzæg’s (2010) unified typology approach.

Conclusion

The findings in this study do not support claims suggesting that users replace in-person socializing with SNSs (e.g., Turkle, 2011) or that SNS users are “antisocial networking” (e.g., *The New York Times*, 2010, 30 April). A significantly higher score was found in all three waves among SNS users in comparison to non-users on three out of four social capital dimensions:

- SNS users report significantly more face-to-face interaction with their close friends than nonusers (H1a supported).
- SNS users report more acquaintances than nonusers (H2a supported).
- SNS users have greater bridging capital than nonusers (H4a supported, except in 2010).

These results suggest that the usage of SNSs and social contact are supplementary, and might extend existing levels of social contact. Surprisingly, despite an increasing interconnectivity offline and online, SNS users are more likely than nonusers to report loneliness, in particular males associated with an active usage pattern such as Debaters and Advanced Users are likely to do so. In this respect, the finding in this study supports some of the negative claims by academics such as Turkle (2011). Further, this study shows major evidence for the need to distinguish SNS users. The analysis supports the postulation of five distinct user types within SNSs. Over half of the SNS user population are either Sporadics or

Lurkers, which indicates passive consumption and quite low-interest or low-skilled use of SNSs for the majority of the SNS user population. This may reflect a new kind of digital divide, where a large part of the population is not suited to adopt, utilize, and reap the rewards of new networked societies. Consistent with the initial hypothesized, Socializers reported significantly more face-to-face interaction, more offline acquaintances, more bridging capital, and less loneliness compared to other user types. In general, the more social passive user types, such as Sporadics and Lurkers, reported less social capital, while Advanced Users and Debaters (males) reported increases in loneliness. Therefore, to minimize the social costs and maximize social capital, the findings herein support a future development and deployment of SNS services that nurture the usage patterns of Socializers with an intense focus on preexisting communities and strong relationships.

However, the conclusions in the present study should be interpreted with caution; the effect sizes were rather small and it was not possible to infer causation from a statistical association between SNS-usage and social implications. While the longitudinal component is an important strength of the present research, yet longer and more extensive longitudinal studies with more sophisticated statistical analyses are recommended for future research. The present study is further limited by the operationalization of social capital, as it measures the value of social connections only to a limited degree. Hence, we recommend that future researchers focus on more extensive measures of social capital, with a particular focus on measures of network size and the balance between weak and strong ties. This study is also limited by the country specific sample. The study was conducted in one country, Norway. While there is a strong rationale for these choices (Norwegians are early adopters of information and communications technologies in general and SNSs in particular). Future research should try to confirm the present results in other countries to see if there are cultural differences related to the social implications of SNS usage.

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Appendix

Table A1 identifies five different clusters (C1, C2, C3, C4, and C5) and their separate mean scores (1 = “Never or almost never” and 4 = “Daily”) in three annual waves.

Table A1 Mean scores within each cluster from 2008 to 2010

	C1			C2			C3			C4			C5		
	Sporadics			Lurkers			Socializers			Debaters			Advanced		
	08	09	10	08	09	10	08	09	10	08	09	10	08	09	10
Write contributions	1.1	1.1	1.1	1.3	1.5	1.8	1.9	1.9	1.9	2.7	2.4	2.6	2.5	2.8	2.8
Update status	1.1	1.2	1.2	1.8	1.7	1.7	2.6	2.7	2.3	2.0	2.6	2.4	3.0	3.1	2.6
Add arrangements	1.0	1.0	1.0	1.1	1.1	1.1	1.4	1.2	1.2	1.2	1.4	1.8	2.3	2.1	2.4
Fix user profile	1.1	1.1	1.1	1.4	1.3	1.2	1.9	1.4	1.3	1.7	1.6	2.0	2.5	2.4	1.8
Upload photos	1.1	1.1	1.1	1.4	1.3	1.4	1.9	1.5	1.6	1.6	1.8	2.1	2.6	2.4	2.0
Upload music	1.0	1.0	1.0	1.2	1.1	1.2	1.3	1.0	1.1	1.1	1.2	2.0	2.6	2.0	2.1
Upload movie	1.0	1.0	1.0	1.1	1.0	1.1	1.2	1.0	1.0	1.1	1.1	1.3	2.3	2.0	2.0
Watch movie	1.2	1.1	1.1	1.5	1.5	1.4	1.9	1.4	1.6	1.8	2.0	2.1	3.0	2.6	1.8
Watch photos	1.5	1.5	1.5	2.4	2.2	2.0	3.2	2.6	2.8	2.6	3.1	3.0	3.3	3.3	2.5
Listen to music	1.2	1.1	1.1	1.4	1.4	1.6	2.1	1.4	1.5	1.5	2.0	2.5	3.2	3.0	2.9
Find useful information	1.5	1.4	1.5	1.9	2.2	2.2	2.6	2.1	2.3	2.4	3.1	3.0	3.2	3.5	2.6
Find information about friends	1.4	1.5	1.5	2.4	2.2	2.3	3.3	2.8	3.0	2.4	3.1	3.2	3.2	3.5	3.3
Find information about family	1.2	1.2	1.2	1.6	1.7	1.9	2.5	2.3	2.4	1.5	2.6	3.0	2.	3.2	3.1
Professional purposes	1.2	1.1	1.2	1.3	1.3	1.3	1.6	1.3	1.3	1.4	1.8	1.6	2.6	2.7	2.8
See if somebody has contacted me	1.5	1.5	1.7	2.7	2.6	2.6	3.5	3.3	3.3	3.2	3.6	3.7	3.3	3.5	2.6
Get in touch with new people	1.1	1.1	1.1	1.4	1.3	1.4	1.9	1.4	1.4	2.2	1.8	2.1	3.0	2.8	3.3
Read new contributions	1.4	1.4	1.5	2.1	2.3	2.8	2.9	3.0	3.2	3.3	3.4	3.6	3.2	3.3	1.9
Arrange appointments	1.0	1.0	1.1	1.4	1.3	1.3	2.1	1.8	1.8	1.8	2.0	3.0	2.6	2.8	3.3
Educational purposes	1.1	1.0	1.1	1.2	1.1	1.1	1.6	1.3	1.3	1.2	1.5	2.4	2.6	2.7	2.4
Write/chat with close friends	1.3	1.4	1.4	2.2	2.1	2.1	3.3	3.1	2.8	2.7	3.1	3.7	3.3	3.6	2.7
Write/chat with acquaintances	1.2	1.3	1.3	2.1	1.9	2.0	3.2	2.9	2.5	2.7	2.9	3.6	3.3	3.5	2.9
Write/chat with my family	1.2	1.2	1.2	1.8	1.7	1.5	2.7	2.5	2.2	1.8	2.4	2.8	2.9	3.2	3.0
Write/chat with unknown	1.0	1.0	1.0	1.1	1.1	1.2	1.5	1.1	1.2	1.9	1.5	2.8	2.5	2.8	2.7
Discussion/debate	1.1	1.0	1.0	1.1	1.2	1.3	1.2	1.2	1.3	2.4	2.1	2.9	2.8	2.6	1.5
Follow discussion threads	1.2	1.1	1.2	1.4	1.5	1.6	1.6	1.4	1.8	2.9	2.7	3.4	2.9	3.0	2.2
Give a "gift"	1.0	1.0	1.0	1.2	1.1	1.1	1.4	1.2	1.1	1.2	1.2	1.7	2.2	2.3	2.8
Run group(s)	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.1	1.1	1.4	1.3	1.6	2.5	2.4	1.4
Profile surfing	1.1	1.1	1.1	1.6	1.5	1.2	2.7	1.8	2.5	2.4	2.6	3.0	2.9	3.0	1.9
Political reasons	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.0	1.0	1.2	1.2	1.2	2.0	2.0	1.9
Gaming/quiz	1.2	1.2	1.1	1.5	1.5	1.4	1.9	2.0	1.7	1.6	2.0	1.8	2.5	2.7	2.6
Time-killing	1.5	1.4	1.5	2.3	2.3	2.1	3.3	3.2	3.3	3.0	3.3	1.9	3.2	3.3	3.3
Flirt	1.0	1.0	1.0	1.1	1.1	1.0	1.6	1.2	1.3	1.6	1.5	2.0	2.3	2.2	2.7

Note. 08 = 2008, 09 = 2009, 10 = 2010. The analysis included: 1) 2008: n = 1,154, 2) 2009: n = 745, and 3) 2010: n = 391.