

# Social Network Sites: The Influence of the Number of Friends on Social Capital

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## Abstract

Some studies suggest that Social Network Site (SNS) usage can have a positive influence on Social Capital. However, it remains unclear which specific usage aspects are the reason for this potential influence. We postulate a positive influence of the Number of SNS Friends on two specific aspects of Social Capital: Bonding Capital and Bridging Capital. After surveying 161 Facebook users, we were able to confirm both relationships. Overall, our findings suggest that SNS members can increase their Social Capital by having as many as possible SNS friends. However, our findings also suggest that other influence factors might play a greater role.

## 1 Introduction

*Social Capital* is the contextual complement of human capital. While the latter refers to personal ability, *Social Capital* refers to opportunity. More specifically, “returns to intelligence, education, and seniority depend in some part on a person's location in the social structure of a market or hierarchy” (Burt 1997, p. 339).

Social Network Sites (SNSs) like *Facebook* provide social functionalities and can be seen as an online-representation of real-world social structures (cf. Boyd and Ellison 2007). Some studies suggest that SNS usage can have a positive influence on users' *Social Capital* (e.g., Ellison et al. 2007). However, it remains unclear which specific usage aspects are the reason for this potential influence.

In this study, we postulate a positive influence of the *Number of SNS Friends* on two specific aspects of *Social Capital*: *Bonding Capital* and *Bridging Capital* (Putnam 2000). While the first one refers to personal opportunities given by rather close and emotionally intense contacts (e.g., those to family members), the latter one derives from relationships that are weak and that build a bridge between the communities of two individuals.

After surveying 161 *Facebook* users via an online questionnaire and applying a structural equation modeling approach, we were able to confirm that the *Number of SNS Friends* has a positive influence on both *Bridging Capital* and *Bonding Capital*. These findings suggest that SNS members can increase their *Social Capital* by having as many as possible SNS friends. However, our findings

also suggest that there might be other factors that contribute stronger to SNS members' *Bridging* and *Bonding Capital* such as the frequency and quality of the SNS members' interaction (Granovetter 1992).

In the next section, we introduce *Social Networks*, *Social Capital*, and *Social Network Sites*. Following this, we present our research model and research design. We then reveal and discuss our results before summarizing our findings, presenting their theoretical as well as practical implications, and providing an outlook on further research.

## 2 Theoretical Background

### 2.1 Social Networks

Social networks are omnipresent in our everyday lives. They are "... an organized set of people that consists of two kinds of elements: human beings and the connections between them". The connections "... can be ephemeral or lifelong; they can be casual or intense; they can be personal or anonymous" (Christakis and Fowler 2009, p. 16).

This attribute of connections is often referred to as *tie strength*, which is the significance or intensity of relationships (Aral and Walker 2014). Granovetter (1973) distinguishes between *strong* and *weak ties*, and the strength can be judged upon by four criteria: the *amount of time* that two people spend together, the degree of *emotional intensity*, the intensity of *mutual trust* and *reciprocal services*. A characteristic of social networks is that strong ties mostly exist between members of a clustered community. In contrast, weak ties build bridges between these communities.

### 2.2 Social Capital

The concept of *Social Capital* postulates that the cultivation of personal relationships leads to benefits (such as job opportunities) for the involved persons (Lin 2008). There are two major perspectives in literature on *Social Capital*. First, the focus of the *system-oriented approach* is on how groups accumulate *Social Capital* as a *collective good*. For example, Putnam (1995, pp. 664f) describes it as "features of social life—networks, norms, and trust—that enable participants to act together more effectively to pursue shared objectives".

Second, the *actor-oriented approach* analyzes *Social Capital* as an individual good. For example, Bourdieu (1986, p. 249) describes it as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition—or in other words, to membership in a group—which provides each of its members with the backing of the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word". Since the objective of this study is to explain the *Social Capital* of distinct individuals, we refer to the actor-oriented approach in the following.

In the previous subsection, we introduced the classification into strong and weak ties in social networks (Granovetter 1973). Putnam (2000) draws an analogous distinction of two forms of social capital: *Bonding* and *Bridging Social Capital*. While *Bonding Capital* refers to personal opportunities given by rather close and emotionally intense contacts (e.g. those to family members), *Bridging Capital* derives from relationships that are weak and that build a bridge between the communities of two individuals.

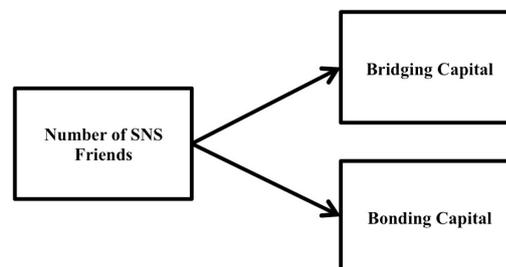
### 2.3 Social Network Sites

Social Network Sites (SNSs) like *Facebook* have been gaining momentum and attracting a large amount of users. Boyd and Ellison (2007, p. 211) defines them as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection [regularly referred to as SNS friends], and (3) view and traverse their list of connections and those made by others within the system”. Furthermore, SNSs regularly provide multiple additional functionalities to their members such as *posting messages* that all SNS friends can see, *sending private messages* that only the receiver is able to read, or *chatting* (Raacke and Bonds-Raacke 2008; Subrahmanyam et al. 2008; Bonds-Raacke and Raacke 2010). Summarizing, SNSs can be seen as an online-representation of real-world social networks (cf. Boyd and Ellison 2007).

During the last years, SNSs have been a popular topic in various research streams. For example, multiple studies had a look at factors driving their usage (e.g., Alarcón-del-Amo et al. 2012; Ernst et al. 2013) or privacy risks arising due to the usage (e.g., Krasnova et al. 2010; Ernst 2014). Although some studies suggest that SNS usage can have a positive influence on members’ social capital (e.g., Ellison et al. 2007), it remains unclear which specific usage aspects are the reason for this potential influence.

## 3 Research Model

In this section, we present our research model in Figure 1 and then outline our corresponding hypotheses.



**Figure 1: Research Model**

*Bridging Capital* is all about a person’s weak ties (cf. Putnam 2000; Granovetter 1973). Without necessarily being close to someone, people can use their loose contacts, i.e., people with whom they have no intense but only a casual relationship (cf. Christakis and Fowler 2009), to spread information fast and effectively (cf. Granovetter 1973), even between communities Putnam (2000).

SNSs provide their members with functionalities that enable them to post messages that all their SNS friends are able to see (Raacke and Bonds-Raacke 2008; Subrahmanyam et al. 2008; Bonds-Raacke and Raacke 2010). Regularly, also the friends of the member’s friends can see these messages. As a result, having many SNS friends enables a member to reach many receivers with his/her posts. In other words, having more SNS friends potentially increases a member’s *Bridging Capital*. We hypothesize that:

**H1:** *A SNS member’s number of SNS friends positively influences his/her Bridging Capital.*

*Bonding Capital* is all about a person's strong ties, i.e., personal opportunities given by close and emotionally intense relationships (such as with family members) (cf. Putnam 2000; Granovetter 1973). SNSs provide their members with functionalities that enable them to foster their close friendships, e.g., through sending private messages or chatting (Raacke and Bonds-Raacke 2008; Subrahmanyam et al. 2008; Bonds-Raacke and Raacke 2010). However, in order to be able to foster a relationship within an SNS, a member needs to have the corresponding person in his/her friends list. In other words, having more SNS friends potentially increases a member's *Bonding Capital*. We hypothesize that:

**H2:** *A SNS member's number of SNS friends positively influences his/her Bonding Capital.*

## 4 Research Design

### 4.1 Data Collection

To empirically evaluate our research model, we surveyed German-speaking users of Facebook between August 4 and August 23, 2014, by posting the link to the online questionnaire in multiple Facebook groups as well as on the Facebook page of one of the authors. In this manner, we obtained 161 complete online questionnaires. 57 respondents were male (35.4 percent) and 104 were female (64.6 percent). 5 respondents were under 18 years old (3.1 percent), 123 were between 18 and 29 years old (76.4 percent), 29 were between 30 and 45 years old (18 percent), and 4 were between 46 and 60 years old (2.5 percent). 2 respondents were unemployed (1.2 percent), 7 were apprentices (4.3 percent), 6 were pupils (3.7 percent), 61 were in employment (37.9 percent), 83 were students (51.6 percent), and 2 selected "other" as a description of themselves (1.2 percent).

### 4.2 Measurement

For *Bridging Capital* and *Bonding Capital*, we used existing and well-established reflective items and scales (Williams 2006); *Number of SNS Friends* was measured directly. Table 1 presents the resulting items with their corresponding sources. *Bridging* and *Bonding Capital* were measured using a seven-point Likert-type scale ranging from "strongly agree" to "strongly disagree" and the *Number of SNS Friends* question was open.

## 5 Results

Since our data was not distributed joint multivariate normal (cf. Hair et al. 2011), we used the *Partial-Least-Squares* approach via *SmartPLS* 3.1.3 (Ringle et al. 2015). With 161 datasets, we met the suggested minimum sample size threshold of "ten times the largest number of structural paths directed at a particular latent construct in the structural model" (Hair et al. 2011, p. 144). To test for significance, we used the integrated *Bootstrap* routine with 5,000 samples (Hair et al. 2011).

Construct	Items (Labels)	Source/ adapted from
Bridging Capital	Interacting with people on Facebook makes me feel connected to the bigger picture (BRI1)	Williams (2006)
	Interacting with people on Facebook makes me feel like part of a larger community (BRI2)	
	Interacting with people on Facebook reminds me that everyone in the world is connected (BRI3)	
Bonding Capital	There are several people on Facebook I trust to help solve my problems (BON1)	Williams (2006)
	There is someone on Facebook I can turn to for advice about making very important decisions (BON2)	
	When I feel lonely, there are several people on Facebook I can talk to (BON3)	
Number of SNS Friends	Approximately how many Facebook friends do you have? (NOF1)	direct measurement

**Table 1: Items of our Measurement Model**

In the following, we will first evaluate our measurement model. Indeed, we will examine the *content validity*, *indicator reliability*, *construct reliability*, and *discriminant validity* of our constructs. Finally, we will present the results of our structural model.

### 5.1 Measurement Model

For *Bridging* and *Bonding Capital* we used common construct definitions and proven items of former studies. Hence, we assume that both constructs as well as their reflective measurements are both representative and comprehensive, thus suggesting their *content validity* (cf. Moon and Kim 2001).

Tables 2 and 3 present the correlations between constructs together with the *Average Variance Extracted* (AVE) and *Composite Reliability* (CR), and our reflective items' factor loadings, respectively: All reflective items loaded high (.734 or more) and significant ( $p < .01$ ) on their parent factor and, hence, met the suggested threshold of *indicator reliability* of .70 (Hair et al. 2011); AVE and CR were higher than .636 and .839, respectively, meeting the suggested *construct reliability* thresholds of .50/.70 (Hair et al. 2009). The loadings from our reflective indicators were highest for each parent factor and the square root of the AVE of each construct was larger than the absolute value of the construct's correlations with its counterparts, thus indicating *discriminant validity* (Fornell and Larcker 1981; Hair et al. 2011).

	BON	BRI	NOF
Bonding Capital (BON)	.637 (.840)		
Bridging Capital (BRI)	.351	.764 (.906)	
Number of SNS Friends (NOF)	.159	.227	-

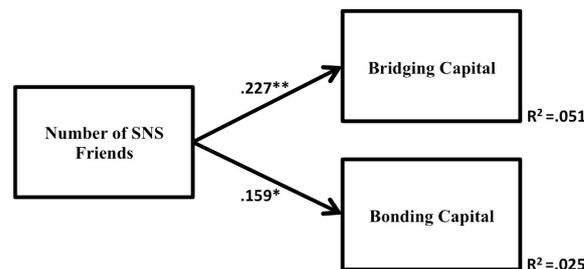
**Table 2: Correlations Between Constructs (AVE (CR) on the Diagonal)**

	BON	BRI	NOF
BON1	.757 (4.68)	.188	.106
BON2	.851 (6.45)	.223	.142
BON3	.794 (5.09)	.423	.129
BRI1	.364	.933 (13.19)	.218
BRI2	.302	.940 (14.65)	.202
BRI3	.246	.734 (5.98)	.170
NOF1	.159	.227	1.0 (-)

**Table 3: Reflective Items' Loadings (T-Values)**

## 5.2 Structural Model

Figure 2 presents the path coefficients of the previously hypothesized relationships as well as the R<sup>2</sup>s of both endogenous variables (\*\* =  $p < .01$ , \* =  $p < .05$ ). *Number of SNS Friends* was found to have a positive influence on both *Bridging Capital* ( $\beta = .227$ ,  $p < .01$ ) and *Bonding Capital* ( $\beta = .159$ ,  $p < .05$ ), confirming hypotheses 1 and 2, respectively. However, the explanatory power of our structural model is weak since it only explains 5.1 percent and 2.5 percent of the variances of *Bridging* and *Bonding Capital*, respectively.



**Figure 2: Findings**

## 6 Discussion

Although we were able to confirm both of our postulated relationships, our findings also suggest that there are other factors contributing to SNS members' *Bridging* and *Bonding Capital*. More specifically, our study explained only 5.1 percent and 2.5 percent of the constructs' variances, leaving 94.9 percent and 97.5 percent unexplained. Indeed, other studies suggest that the interaction patterns between SNS members with regards to frequency and quality might also play an important role for their *Social Capital* (Granovetter 1992).

However, it is not surprising that the *Number of SNS friends* is able to explain a greater part of *Bridging Capital's* variance than of *Bonding Capital's*. More specifically, SNS friends are regularly added based on real-life contacts (Ross et al. 2009). As a result, SNSs might be only one additional possibility for members to foster their close friendships, contributing consistently only marginally to their *Bonding Capital*. In contrast, whereas people have to go through some effort to reach all their weak ties in real-life to spread their information, SNSs provides them with a convenient tool to send messages to all their SNS friends at once. Hence, SNSs are dissimilar useful with regards to *Bridging Capital*.

## 7 Conclusions

We argued that the *Number of SNS Friends* has a positive influence on *Bridging Capital* and *Bonding Capital*. After surveying 161 Facebook users via an online questionnaire and applying a structural equation modeling approach, we were able to confirm both relationships. Still, our findings also suggest that there are other factors contributing to SNS members' *Bridging* and *Bonding Capital*.

Our study has some limitations. First, our empirical findings are only based on one specific SNS: *Facebook*. Hence, there might be differences between this particular SNS and others, especially those with a professional context such as *LinkedIn*. Also, our study might suffer from the general problems of using a student sample. Indeed, 51.6 percent of our respondents were German-speaking students. Hence, our results might not hold true for people from other countries, with different educational backgrounds, or from different age groups.

In summary, our study suggests that SNS members can increase their *Social Capital* slightly by having as many as possible SNS friends. However, other influence factors might play a greater role such as the frequency and quality of the SNS members' interaction. As a next step, we plan to expand our research and address its limitations. More specifically, we want to evaluate the influence of the *Number of SNS Friends* on *Social Capital* in the context of professional SNSs. Additionally, we also plan to take a look at other factors potentially contributing to *Social Capital* such as the *frequency and quality of the interaction* among SNS members.

## 8 References

- Alarcón-del-Amo M-D-C, Lorenzo-Romero C, Gómez-Borja M-A (2012) Analysis of Acceptance of Social Networking Sites. *African Journal of Business Management* 6 (29):8609-8619
- Aral S, Walker D (2014) Tie Strength, Embeddedness and Social Influence: Evidence from a Large Scale Networked Experiment. *Management Science* 60 (6):1352-1370
- Bonds-Raacke J, Raacke J (2010) Myspace and Facebook: Identifying Dimensions of Uses and Gratifications for Friend Networking Sites. *Individual Differences Research* 8 (1):27-33
- Bourdieu P (1986) The Forms of Capital. In: Richardson J (ed) *Handbook of Theory and Research for the Sociology of Education* Greenwood Publishing Group, New York, NY, pp 241-258
- Boyd DM, Ellison NB (2007) Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication* 13 (1):210-230
- Burt RS (1997) The Contingent Value of Social Capital. *Administrative Science Quarterly* 42 (2):339-365
- Christakis N, Fowler J (2009) *Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives*. Little, Brown and Company, New York, NY
- Ellison NB, Steinfeld C, Lampe C (2007) The Benefits of Facebook "Friends": Social Capital and College Students' Use of Online Social Network Sites. *Journal of Computer-Mediated Communication* 12 (4):1143-1168
- Ernst C-PH Risk Hurts Fun: The Influence of Perceived Privacy Risk on Social Network Site Usage. In: *AMCIS 2014 Proceedings*

- Ernst C-PH, Pfeiffer J, Rothlauf F The Influence of Perceived Belonging on Social Network Site Adoption. In: AMCIS 2013 Proceedings
- Fornell C, Larcker DF (1981) Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research* 18 (1):39-50
- Granovetter MS (1973) The Strength of Weak Ties. *American Journal of Sociology* 78 (6):1360-1380
- Granovetter MS (1992) Problems of Explanation in Economic Sociology. In: Nohria N, Eccles RG (eds) *Networks and Organizations: Structure, Form, and Action*. Harvard Business School Press, Boston, MA, pp 471-491
- Hair JF, Black WC, Babin BJ, Anderson RE (2009) *Multivariate Data Analysis*. 7th edn. Prentice Hall, Upper Saddle River, NJ
- Hair JF, Ringle CM, Sarstedt M (2011) Pls-Sem: Indeed a Silver Bullet. *Journal of Marketing Theory and Practice* 19 (2):139-151
- Krasnova H, Kolesnikova E, Guenther O Leveraging Trust and Privacy Concerns in Online Social Networks: An Empirical Study. In: ECIS 2010 Proceedings
- Lin N (2008) A Network Theory of Social Capital. In: Castiglione D, Van Deth J, Wolleb G (eds) *The Handbook on Social Capital*. Oxford University Press, Oxford, UK, pp 50-69
- Moon J-W, Kim Y-G (2001) Extending the Tam for a World-Wide-Web Context. *Information & Management* 38 (4):217-230
- Putnam R (1995) Tuning in, Tuning Out: The Strange Disappearance of Social Capital in America. *PS: Political Science and Politics* 28 (4):664-683
- Putnam R (2000) *Bowling Alone: The Collapse and Revival of American Community*. Simon & Schuster, New York, NY
- Raacke J, Bonds-Raacke J (2008) Myspace and Facebook: Applying the Uses and Gratifications Theory to Exploring Friend-Networking Sites. *CyberPsychology & Behavior* 11 (2):169-174
- Ringle CM, Wende S, Becker J-M (2015) Smartpls 3. <http://www.smartpls.com>
- Ross C, Orr ES, Susic M, Arseneault JM, Simmering MG, Orr RR (2009) Personality and Motivations Associated with Facebook Use. *Computers in Human Behavior* 25 (2):578-586
- Subrahmanyam K, Reich SM, Waechter M, Espinoza G (2008) Online and Offline Social Networks: Use of Social Networking Sites by Emerging Adults. *Journal of Applied Developmental Psychology* 29 (6):420-433
- Williams D (2006) On and Off the 'Net: Scales for Social Capital in an Online Era. *Journal of Computer-Mediated Communication* 11 (2):593-628