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Connection strategies: social capital implications of Facebook-enabled communication practices

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Abstract
This study assesses whether Facebook users have different 'connection strategies,' a term which describes a suite of Facebook-related relational communication activities, and explores the relationship between these connection strategies and social capital. Survey data (N = 450) from a random sample of undergraduate students reveal that only social information-seeking behaviors contribute to perceptions of social capital; connection strategies that focus on strangers or close friends do not. We also find that reporting more 'actual' friends on the site is predictive of social capital, but only to a point. We believe the explanation for these findings may be that the identity information in Facebook serves as a social lubricant, encouraging individuals to convert latent to weak ties and enabling them to broadcast requests for support or information.

Key words
computer-mediated communication, Facebook, social capital, social network sites

The concept of social capital describes the benefits individuals derive from their social relationships and interactions: resources such as emotional support, exposure to diverse ideas, and access to non-redundant information. Social capital is embedded in the structure of social networks and the location of individuals within these structures (Burt, 2005). Because social network sites (SNSs) have the potential to reshape social networks and lower the costs of communicating with (and thus contributing to and extracting benefits from) this social network, SNS use may have social capital implications. This study

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is among the first to explore the relationship between social capital and specific communication practices on the most popular SNS among US undergraduates, Facebook.

Previous scholarship has addressed issues such as the demographic characteristics of SNS users (Hargittai, 2007) and the personal information they reveal on these sites (Acquisti and Gross, 2006), but there is currently little empirical research that describes the specific communication-based relational activities that occur on these sites (who does what and with whom) and how these behaviors affect outcomes of interest. Similarly, while the literature provides a basic understanding of whether Friendships[1] on SNSs represent pre-existing offline connections or new relationships forged online (Ellison et al., 2007), measurement difficulties hamper our ability to provide a clear picture of how online and offline modes of communication replace, complement, and facilitate one another. In the research presented here, we test the proposition that Facebook users will have different 'connection strategies,' a term which describes a suite of Facebook-related relational communication activities, and explore the relationship between these connection strategies and social capital outcomes.

Previous work has established a relationship between Facebook use and social capital levels among undergraduate students (Ellison et al., 2007; Steinfield et al., 2008; Valenzuela et al., 2009). It is not clear, however, whether there are *particular uses of Facebook* that are more likely to result in positive social capital outcomes. In other contexts, scholars have argued that while the internet makes vast amounts of information available, only those who have the skills necessary to locate and evaluate this content can take full advantage of it (Hargittai, 2008). Examining SNS use more specifically, Papacharissi and Mendelson (2008) explored the relationship between motivations for using Facebook and social capital outcomes and Burke et al. (2010) found that while Facebook use overall was associated with social capital, there was a stronger association between social capital and active contributions to the site (versus passive consumption of others' information). These studies suggest that users who have the ability and inclination to engage in certain SNS activities may be more likely to reap social capital benefits.

In addition to explicating this relationship between SNS communication behaviors and social capital, this study advances our ability to measure internet-related social behaviors. Currently, SNS researchers use a variety of measures to assess SNS use, such as number of Friends (Joinson, 2008), time on site (Tong et al., 2008), or the number of completed profile fields (Lampe et al., 2007; Stecher and Counts, 2008). The Facebook Intensity (FBI) scale, developed by Ellison et al. (2007) and used in other Facebook research (e.g., Tomai et al., 2010; Valenzuela et al., 2009), uses time on site, number of Friends, and a series of Likert-scale attitudinal items such as, 'I feel out of touch when I haven't logged onto Facebook for a while.' Similar to the way in which scholarship on the digital divide has evolved from simple measures of internet access to nuanced assessments of internet activities, SNS researchers need to develop measures of specific SNS-based communication practices, not just generic usage, in order to better discern usage patterns and their effects.

An important component of measuring SNS communication practices entails accurately characterizing the kinds of social relationships that are being formed and maintained via SNSs. One question is whether SNSs are primarily used to form mixed-mode

relationships (which form online and then migrate offline; see Walther and Parks, 2002) or to support existing relationships. In general terms, there is evidence that SNSs are more often used to articulate previously established relationships (see boyd & Ellison, 2007, for a review). However, measurement difficulties, especially surrounding the concepts of 'offline' and 'online' interaction, point to a need to confirm and unpack this general trend.[2] An investigation into the ways SNS users manage their online and offline interactions and the outcomes of these practices is important because it has the potential to shed light on a recurring debate within the internet effects literature: whether the internet augments or displaces social relationships. For instance, Bessiere et al. (2008) found that using the internet to 'meet new people' was associated with higher depression scores seven months later; they speculated that these new connections constituted weak ties, and that interactions with people met online replaced time spent with strong ties. However, they noted that they were unable to determine 'what "meeting new people" online … really meant to [their] respondents' (p. 64). Assessing the role of SNS use in offline and online interactions will contribute to our understanding of how these tools reshape social networks and the outcomes of these practices.

Social capital and relationship development online and offline

The concept of social capital traces its roots to the work of Bourdieu (1986) and Coleman (1988), with subsequent extension by Burt (1992), Putnam (1995), and Lin (2001). Social capital can be considered 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' (Bourdieu, 1986: 248). Social capital can be understood as a form of capital, like financial or human capital, that is embedded in the relationships between individuals, and can be measured at the individual or group level.

Putnam (2000) delineated two basic forms of social capital: bonding and bridging. Bonding social capital describes benefits from close personal relationships, which might include emotional support, physical succor, or other 'large' benefits (such as willingness to loan a substantial sum of money). Bridging social capital, the benefits derived from casual acquaintances and connections, can also lead to tangible outcomes such as novel information from distant connections and broader world-views. Empirical research confirms the practical importance of bridging social capital. In Granovetter's (1973) work on 'the strength of weak ties', weak ties in a social network were more likely to have information not possessed by the individual or by the individual's strong ties. Similarly, Boase et al. (2006) found that those with a wider range of occupations represented in their social circle were more likely to get help doing things like changing jobs or finding health information.

Social interactions on SNSs

SNSs are bundles of technological tools that incorporate features of earlier technologies (such as personal websites) but recombine them into a new context that supports users' ability to form and maintain a wide network of social connections. Although precise

data regarding usage are not available, survey data suggest that upwards of 90 percent of undergraduates use Facebook (Lampe et al., 2008). After creating a profile on a SNS such as Facebook, users typically invite others into their network, thus giving one another increased access to profile information and more communication options. In Facebook, this is called 'Friending' (a verb used to describe adding someone to one's 'Friends' list), and there is a wide range of conceptions of what Friendship on an SNS signals (boyd, 2006).

Boyd and Ellison (2007) argue that the term 'social network sites' reflects actual usage patterns, in that individuals are typically using the sites to articulate and reflect offline social relationships, and are generally not trying to meet strangers on the site (as might be suggested by the term 'social *networking* sites'). The extant literature on this topic suggests that Facebook is used more for communication among acquaintances and offline contacts than it is for connecting with strangers (Ellison et al., 2007; Lampe et al., 2006) and that most Facebook 'Friend' connections represent 'in person' relationships (Mayer and Puller, 2008; Subrahmanyam et al., 2008). This represents a fundamental difference between SNSs and earlier 'online communities,' which utilized the internet as a way to bring together people based on shared interests as opposed to shared geography (Rheingold, 1993). Traditional survey measures that attempt to probe communication patterns may not be transferable to SNS contexts because they do not adequately capture the overlapping nature of online and offline interactions. For instance, consider two students who have never spoken but learn from Facebook that they share the same hometown – information that prompts a face-to-face interaction in class the following day. Although this interaction occurs face-to-face, it is predicated on online information – a nuance that would not be captured by traditional questionnaire items that ask whether they first 'met' online or offline. Conceptualizing 'online to offline' and 'offline to online' as dichotomous and mutually exclusive constructs prevents these important distinctions from emerging, stymieing our ability to describe and understand these communication processes.

In addition to supporting existing social relationships, Facebook contains many features that could be used to create new connections, although this seems to be a less common use. At the time of data collection, users could randomly browse the profiles of those in their Facebook 'network' (potentially thousands of individuals) whose privacy settings permitted access[3] and then poke, message, or try to Friend them. They could also encounter other users through shared SNS contexts, such as playing 'Farmville' or other application-based games, and Friend them in order to receive in-game benefits associated with a larger Friend network. However, these forms of indiscriminate Friending should be distinguished from the practice of 'social browsing' (Lampe et al., 2006), which refers to investigating people with whom one shares an offline connection, such as a shared class or mutual friend. In short, Facebook supports a wide spectrum of possible connections, ranging from those who share an offline connection to complete strangers who find one another through a variety of features such as Groups, networks, fan pages, social games and applications, photographs, interest-based profile fields, status updates, and Friend networks.

The concept of latent ties can help distinguish between these different Friending practices on Facebook. Haythornthwaite (2005) described the ways in which information and

communication technologies open up new pathways of communication between individuals who would not otherwise connect. These 'latent ties,' defined as connections that are 'technically possible but not yet activated socially' (p. 137), arise whenever a new medium is introduced that enables individuals to connect with each other (e.g., a telephone system and a telephone directory). As Ellison et al. (2007) speculated, Facebook's inclusion of a wide range of identifying information, including mutual friends and shared interests, may encourage users to activate latent ties, transforming them into the weak and bridging ties associated with positive bridging social capital outcomes. Based on this review, it is important to distinguish between uses of the site that involve initiating a relationship with a complete stranger, with no previous offline connection, and uses that essentially activate online ties among those who share an offline connection. Our use of the term 'latent tie' thus describes a relationship between two individuals which has not been socially activated. These individuals may have a passing awareness of one another (or may have even met briefly), but the affordances of the SNS serve to enhance and accelerate the relationship development process.

SNSs are also used by close friends, although little published research focuses on these uses. Close friends who connect through Facebook are likely to find it an efficient and easy way to keep in touch, and the lightweight interactions enabled by the site are likely to benefit these more developed relationships as well. In fact, 20 percent of the SNS users in research by Subrahmanyam et al. (2008) reported that their SNS use brought them closer to friends, and Ellison et al. (2007) found that intensity of Facebook use predicted bonding social capital, which is often associated with strong ties such as close friends. Facebook is unlikely to be a critical communication channel for close friends because these stronger ties typically use multiple, redundant channels to communicate, as suggested by media multiplexity (Haythornthwaite, 2005).

In summary, although research suggests that Facebook users are more likely to use the site to articulate existing relationships than they are to use the site to meet strangers, there is also some indication that users may use the site to convert latent into weak ties. We are particularly interested in distinguishing among the various uses of Facebook aimed at connecting with diverse types of others, including existing strong ties, casual acquaintances (i.e., latent ties), and strangers who share no prior or offline connection. Given the ambiguity in the literature about these specific behaviors, our first research question asks:

RQ1: Are there distinct patterns in the online and offline communication behaviors employed by Facebook users in relation to close friends, latent ties, and strangers?

Assuming different connection strategies exist among users,[4] it is important to assess how these strategies relate to outcomes of interest, such as bridging and bonding social capital. Just as Quan-Haase and Wellman (2004: 125) point out that 'not all uses of the Internet are social', different uses of the site will result in different social capital outcomes. Connecting with latent ties may increase bridging social capital while using the site to maintain existing close friendships may encourage bonding social capital. Thus, we ask whether distinct types of communication behaviors on Facebook lead to different social capital outcomes.

RQ2: Which Facebook-related communication behaviors, if any, are more likely to predict bridging social capital?

RQ3: Which Facebook-related communication behaviors, if any, are more likely to predict bonding social capital?

We also explore the relationship between number of Friends and social capital. The site's affordances facilitate giving and receiving emotional support through one's Friend network; for instance, a status update complaining about an illness serves to inform one's social network and may generate supportive comments or advice. Friends may be more likely to respond to requests for social support if they see the request was posted recently (in that posting 'I'm sorry' a week after a friend complains of a bad day may seem ineffective); thus, it may be that larger Friend networks are more likely to generate social support messages because someone in the network will see the request immediately and respond. Likewise, the site supports requests for information or perspective-sharing, which can be easily shared with one's entire Friend network; responses are more likely to be useful when contributed by weak ties (Granovetter, 1973) and, therefore, the larger one's Friendship network, the more likely it is to include someone with access to the necessary information. Therefore, we expect Friend counts will be positively correlated with both types of social capital.

Related research suggests that boundary conditions may affect the positive association between number of Friends and social capital levels such that the relationship is actually curvilinear. There may be a limit to the number of stable social relationships we can maintain, according to research by Dunbar (1996) (i.e., 'Dunbar's number'). SNSs may support the maintenance of larger social networks (Donath, 2007), allowing users to track and engage with more people than they normally would. However, individuals may indiscriminately accumulate large numbers of Friends – too many to engage with meaningfully, even with the help of technological tools.

Is 'Friend collecting' productive from a social capital perspective? Tong et al. (2008) examined perceptions of social attractiveness and found that higher Friend counts were associated with higher levels of perceived social attractiveness – but only to a point. Individuals who had more than 302 Facebook Friends were rated as lower in social attractiveness, perhaps because these individuals appeared to be 'friending out of desperation' (p. 542) or otherwise inappropriately replacing face-to-face social interactions with computer-mediated ones. Likewise, Donath and boyd (2004) pointed to the pejorative term 'Friendster whores' as reflecting negative perceptions of random Friending behavior.

Some Friends may be less beneficial than others from a social capital perspective. Although Facebook enables users to broadcast requests, we suspect that information requests are less likely to be answered by Friends who are strangers (i.e., with little to no shared history) and that provisions of emotional support will be less meaningful when coming from strangers with little personal knowledge of the recipient. We expect that connection strategies that reflect use of the site to express and develop relationships rooted in some kind of offline connection (operationalized as 'actual friends') are more likely to predict social capital than will using the site to meet strangers, and that social capital is more likely to be generated from latent ties and strong tie Friends as opposed

to Friends who start out as complete strangers. Additionally, following Tong et al. (2008) and Donath and boyd (2004), there may be a point of diminishing returns in regards to Friend counts. Thus:

H1: The greater the number of Facebook Friends, the greater the reported bridging social capital.
H1a: This relationship will be stronger for the number of actual friends on the site than for the total number of all Facebook Friends.
H1b: The relationship between the number of actual friends and bridging social capital will be curvilinear, reaching a point where increases in the number of actual friends is no longer associated with higher social capital.
H2: The greater the number of Facebook Friends, the greater the reported bonding social capital.
H2a: This relationship will be stronger for the number of actual friends on the site than for the total number of all Facebook Friends.
H2b: The relationship between the number of actual friends and bonding social capital will be curvilinear, reaching a point where increases in the number of actual friends is no longer associated with higher social capital.

Methods

In order to address our research questions and hypotheses about the relationship between distinct Facebook connection strategies and social capital, a survey of undergraduate students at a large Midwestern university was fielded in April 2008. A random sample of 2000 undergraduate students, provided by the university registrar, was invited to participate, yielding 450 respondents for a response rate of 22.5 percent. The survey was hosted on Zoomerang.com and subjects were entered into a raffle for 15 $40 Amazon.com gift certificates.

Measures

Demographics. For descriptive and comparative purposes, we asked a series of questions about the demographics of our sample. Sixty-two percent of respondents were female, with an average age of 20.4. They were primarily white (81%), approximately evenly split between on-campus (49%) and off-campus (51%) residence, and the average year in school was 2.68 (where 1 = first year and 4 = senior). They reported using the internet for a mean of 4.01 hours a day and spent 81.4 minutes on Facebook each day; we capped the total hours of Facebook use at 8, approximately three standard deviations from the mean.

Psychological well-being measures. Self-esteem was found to be an important predictor in previous work exploring Facebook use and social capital (Ellison et al., 2007; Steinfield et al., 2008). Thus, we included a measure of self-esteem as a control variable in our regressions. Self-esteem was measured using seven items from the Rosenberg Self-esteem Scale (Rosenberg, 1989) as reported in Ellison et al. (2007). The mean of this

scale was 4.20 on a 5-point scale, with a standard deviation of 0.57, and the scale was reliable (Cronbach's $\alpha = .86$).

Facebook use. Respondents were first asked if they were Facebook members. Those who responded in the affirmative ($N = 436$, 96%) were then asked a series of questions related to their Facebook usage. These included when they first joined the site, how many minutes they spent using it each day in the past week, and how many total Facebook Friends they had. Although previous work in this topic has used Facebook Intensity (e.g., Ellison et al., 2007) to assess Facebook use, we wanted to assess differences between total number of Friends and perceptions of 'actual' friends, which the FBI measure would not enable us to do. Using FBI would also preclude us from doing curvilinear analyses. We control for minutes on Facebook because we want to assess outcomes of certain kinds of uses, while controlling for the fact that those who spend more time on the site might have more opportunities to develop social capital.

Friends on Facebook. In order to see if actual friends were more likely to be associated with social capital than the total number of Friends (including those who are not considered actual), we asked about the total number of Facebook Friends reported by participants ('Approximately how many TOTAL Facebook friends do you have at MSU or elsewhere?'), and what proportion of these Friends were considered 'actual' friends ('Approximately how many of your TOTAL friends do you consider actual friends?'). We intentionally did not specify what 'actual friends' meant in order to tap into individual understandings of friendship. The median number for total Facebook Friends was 300 and the median number of 'actual' Facebook friends was 75. Overall, the percentage of all Facebook Friends who were considered 'actual' friends was 25 percent.[5]

Connection strategies. We created a series of items asking respondents to indicate how likely they were to browse the Facebook profile, contact via Facebook, add as a Facebook friend, and ultimately meet face-to-face with various types of others, such as close friends or someone from their residence hall (see Table 1). We focused on three types of others reflecting distinct sets of behavior: use of the site for connecting with total strangers at the university, with latent ties representing an offline connection, and with close friends. The three relationship prompts, in order of increasing prior offline connection, were:

- *Total stranger*: 'Imagine a MSU student you've never met in real life or had a face-to-face conversation with.'
- *Someone from your residence hall (latent tie)*: 'Imagine someone at MSU who lives in your residence hall who you would recognize but have never spoken to.'
- *Close friend:* 'Think about one of your close friends.'

We further assessed respondents' connection practices with several items gauging the extent to which they used Facebook to meet new people and learn more about acquaintances, derived from items reported in Ellison et al. (2007). These were asked as a series of 5-point agree/disagree Likert scale items (see Table 1).

Table 1. Summary statistics for various Facebook connection strategies

Items	Mean	*SD*
Initiating Scale (Cronbach's α = .86)	**1.87**	**0.88**
I use Facebook to meet new people.[2]	2.13	1.12
MSU Stranger: Browse their profile on Facebook[1]	2.34	1.25
MSU Stranger: Contact them using Facebook, or by using information from Facebook[1]	1.62	0.97
MSU Stranger: Add them as a Facebook friend[1]	1.71	1.09
MSU Stranger: Meet them face-to-face[1]	1.52	0.92
Information-seeking (Cronbach's α = .77)	**3.40**	**0.84**
I have used Facebook to check out someone I met socially.[2]	3.92	0.91
I use Facebook to learn more about other people in my classes.[2]	3.31	1.08
I use Facebook to learn more about other people living near me.[2]	2.93	1.16
Someone in Residence Hall: Browse their profile on Facebook[1]	3.43	1.18
Maintaining (Cronbach's α = .87)	**4.68**	**0.61**
Close Friend: Browse their profile on Facebook[1]	4.62	0.76
Close Friend: Contact them using Facebook, or by using information from Facebook[1]	4.57	0.83
Close Friend: Add them as a Facebook Friend[1]	4.79	0.58
Close Friend: Meet them face-to-face[1]	4.73	0.69

[1] Scale ranges from 1 = not likely at all to 5 = very likely.
[2] Scale ranges from 1 = strongly disagree to 5 = strongly agree.

Bridging social capital. We adapted the bridging social capital measure constructed by Ellison et al. (2007), which contained five items from Williams' (2006) Bridging Social Capital subscale as well as three additional items intended to place these dimensions of bridging social capital in the specific university context. For this study, we omitted two items ('I am interested in what goes on at MSU' and 'MSU is a good place to be') from the Ellison et al. (2007) scale in order to more closely mirror Williams' original scale (*SD*). We did keep one item, 'I feel I am part of the MSU community' because it taps into a dimension of bridging social capital which Williams (2006) describes as 'a view of oneself as part of a broader group' (p. 600). Given its size (over 46,000 students) and diversity (76% White, 6% International, 8% African-American/Black, 5% Asian/Pacific Islander, and 3% Hispanic), we assume that students who report being part of the university community see themselves as part of this large, diverse, broad group. The final scale (Cronbach's α = .84; M = 3.74; SD = 0.61) consisted of the items: I feel I am part of the MSU community; Interacting with people at MSU makes me want to try new things; Interacting with people at MSU makes me feel like a part of a larger community; I am willing to spend time to support general MSU activities; At MSU, I come into contact with new people all the time; Interacting with people at MSU reminds me that everyone in the world is connected.

Bonding social capital. We used the bonding social capital measure employed by Ellison et al. (2007), comprised of five items from the bonding subscale of the internet social

capital scales developed and validated by Williams (2006) and adapted to the university context (Cronbach's $\alpha = .80$; $M = 3.69$; $SD = 0.75$).

Findings

RQ1 probed whether there exist distinct groupings of specific online and offline communication behaviors employed by Facebook users in relation to close friends, latent ties, and strangers. We conducted an exploratory factor analysis (available from the authors upon request) of the 12 connection strategies items and the items probing other purpose of use behaviors, using principal components analysis with varimax rotation. The initial results yielded five factors with eigenvalues greater than 1. However, these results exhibited significant cross-loading of items and several of the factors were not interpretable. After removing cross-loading items, the remaining items factored cleanly into three dimensions, each of which represents a distinct set of social behaviors:

- *Initiating*: This dimension represents the use of Facebook to meet strangers or make new friends without any prior offline connection. Items included all four of the online/offline behaviors (browsing, contacting, Friending, and meeting face-to-face) in relation to Michigan State University (MSU) strangers and one other item, 'I use Facebook to meet new people.'
- *Maintaining*: This dimension reflects using the site to maintain existing close ties. It includes all four of the online/offline behaviors in relation to close friends.
- *Social information-seeking*: This dimension reflects use of the site for learning more about people with whom the user has some offline connection. It includes three items about usage ('I have used Facebook to check out someone I met socially'; 'I use Facebook to learn more about other people in my classes'; 'I use Facebook to learn more about other people living near me') and one item probing the likelihood of browsing the profile of someone in their residence hall.

High loading items on each scale were averaged to create three separate scales representing each connection strategy. All items were measured on 5-point scales, so the connection strategy scales range from a minimum of 1 ('Strongly Disagree') to a maximum of 5 ('Strongly Agree'). Initiating connections with strangers is clearly not a typical usage of Facebook, as evidenced by the low mean ($M = 1.87$), which was significantly lower than the other connection strategies based on matched sample *t*-tests (infoseeking vs. initiating: $t = 31.65$, $DF = 413$, $p < .0001$); (maintaining vs. initiating: $t = 53.20$, $DF = 413$, $p < .0001$). Nearly all respondents used Facebook to maintain ties with close friends ($M = 4.68$), which was significantly higher than social information-seeking ($M = 3.40$) (maintaining vs. infoseeking: $t = 30.64$, $DF = 413$, $p < .0001$). Both the initiating and maintaining strategies exhibit highly skewed distributions (see Figure 1), while social information-seeking – which exhibits a modest amount of skewness (0.71) – is normally distributed.

For RQ2 and RQ3, we explored whether any of these communication patterns were predictive of respondents' reported levels of bridging and bonding social capital. We conducted a series of regression analyses predicting social capital in order to isolate the effect of the various communication patterns above and beyond the factors identified in other work (self-esteem, general internet use, and measures of Facebook use including

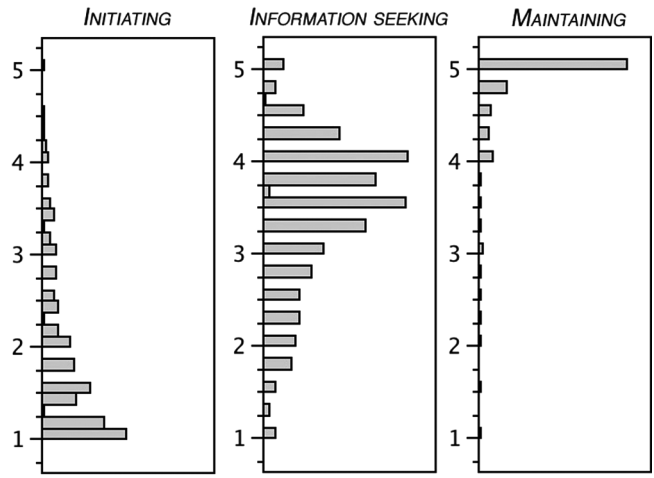

Figure 1. Distributions of three Facebook connection strategies

time spent on Facebook and number of Friends). We initially included demographic variables as controls, but dropped all but year in school from our final analyses since factors such as gender and ethnicity were not significant predictors of bridging social capital in either our analyses or earlier studies (i.e., Ellison et al., 2007). Regressions included both total Friends and actual friends in order to assess H1a and H2a. In order to explore whether the effect of actual friends diminishes at a certain point, we included a squared term for actual friends.

Our first regression model, addressing RQ2 and H1, examined bridging social capital as the dependent variable; control variables, total number of Facebook Friends, actual Facebook Friends, and the squared term for actual Facebook Friends were included as independent variables (see Table 2). This model has an adjusted R^2 of .12. Adding social information-seeking to the model increased the adjusted R^2 to .16. We also ran a model using all three of the communication behaviors, but the addition of the maintaining and initiating factors did not increase the R^2, nor were these factors significant in the model.[6] Using the model that included social information-seeking, standardized coefficients reveal that the extent to which students engaged in social information-seeking behaviors did, in fact, contribute significantly ($\beta = .22$, $p < .0001$) to bridging social capital. Year in school ($\beta = –0.10$, $p = .0465$), number of actual friends ($\beta = .41$, $p = .0009$), and self-esteem ($\beta = .25$, $p < .0001$) were also significant predictors. The number of total Facebook Friends was not a significant predictor, thus supporting H1a, which predicted that the number of actual friends would be more predictive of bridging social capital than the number of Facebook Friends. This effect appears to diminish if the number of actual friends is too large, as evidenced by the significant, negative squared term ($\beta = –.25$, $p = .0330$), supporting H1b. Figure 2 fits the linear and squared terms to the scatterplot between actual friends and bridging social capital, illustrating the inverted U-shaped relationship between the number of actual friends and bridging social capital. The gray line represents a linear relationship between number of actual friends and bridging social

Table 2. Regression predicting bridging social capital from year in school, internet use, self-esteem, social information-seeking, and Facebook use (time, Friends, actual friends)

Variable	Model 1		Model 2	
	Std. Beta	*P*	Std. Beta	*P*
Intercept	0	<.0001	0	<.0001
Year in school	–0.11	0.0281	–0.10	0.0465
Daily internet use (hours)	0.06		0.05	
Self-esteem	0.23	<.0001	0.25	<.0001
Minutes on Facebook	0.04		0.01	
Total Friends on Facebook	–0.00		–0.05	
Actual friends on Facebook	0.41	0.0011	0.41	0.0009
Actual friends on Facebook (squared term)	–0.24	0.0391	–0.25	0.033
Social information-seeking via Facebook			0.22	<.0001
	$R^2 = .14$ Adjusted $R^2 = .12$, $F = 8.07$, $p < .0001$, $N = 367$		$R^2 = .18$ Adjusted $R^2 = .16$, $F = 9.86$, $p < .0001$, $N = 367$	

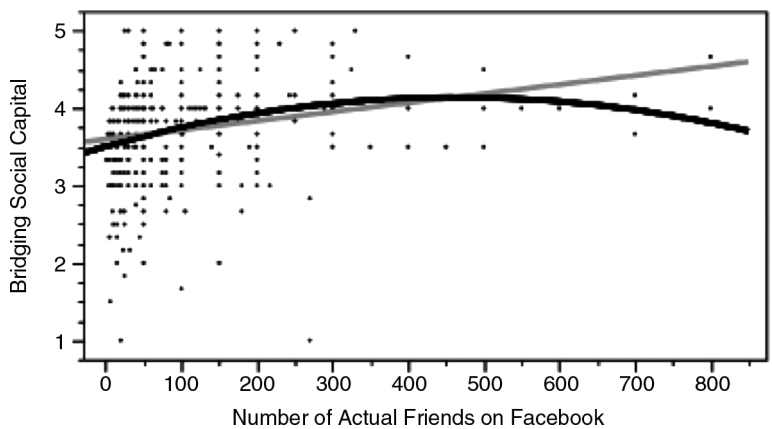

Figure 2. Relationship between number of actual friends on Facebook and bridging social capital

capital while the black line represents the relationship between bridging social capital and the squared number of actual friends. Social capital benefits appear to diminish after approximately 500 reported actual friends.

In order to address RQ3 and H2, we examined these same variables in a regression predicting bonding social capital (see Table 3). After first controlling for year in school, self-esteem, general internet use and Facebook use (time spent on site), as well as the number of total Friends on Facebook, actual friends on Facebook, and the square of actual friends, the extent to which students engaged in social information-seeking

behaviors did contribute significantly (β = .15, p = .0056) to bonding social capital. The overall adjusted R^2 increases from .07 to .09 with social information-seeking behaviors in the equation. As with bridging social capital, self-esteem (β = .18, p = .0006) was a significant predictor of bonding social capital. The number of actual friends (β = .33, p = 0.009) was significant, although the number of total Facebook Friends was not, supporting H2a. Once again, the squared term for actual friends (β = –.24, p = .0496) suggests a diminishing return beyond approximately 500 actual friends, supporting H2b. Figure 3 plots the relationship between actual friends and bonding social capital, again depicting diminishing social capital returns for those who report more than 500 actual friends.

Discussion

The overarching goal of this study was to explore how undergraduates use Facebook to initiate and develop social relationships and to assess the impact of these practices on perceived social capital levels. Because Facebook is closely integrated into the daily experience of most undergraduate students in the US, we investigated whether some patterns of Facebook-enabled social interaction are more effective than others for actualizing 'the benefits of Facebook "friends" (Ellison et al., 2007). This study contributes to our understanding of SNS-enabled social capital by identifying specific communication practices (i.e., 'connection strategies') on the site, developing scales to measure them, and empirically assessing their relationship to users' social capital. Furthermore, this study identifies intriguing patterns regarding the quantity and quality of Facebook Friendships as they relate to levels of social capital.

Our first research question asked about Facebook users' communication practices. Specifically, we were interested in *who* users are interacting with and *what* they are doing

Table 3. Regression predicting bonding social capital from year in school, internet use, self-esteem, social information-seeking, and Facebook use (time, Friends, actual friends)

Variable	Model 1		Model 2	
	Std. Beta	*P*	Std. Beta	*P*
Intercept	0	<.0001	0	<.0001
Year in school	0.00		0.01	
Daily internet use (hours)	–0.01		–0.02	
Self-esteem	0.17	0.0013	0.18	0.0006
Minutes on Facebook	0.03		0.01	
Total Friends on Facebook	0.09		0.06	
Actual friends on Facebook	0.33	0.0098	0.33	0.0093
Actual friends on Facebook (squared term)	–0.24	0.053	–0.24	0.0496
Social information-seeking via Facebook			0.15	0.0056
	R^2 = .09 Adjusted R^2 = .07, F = 5.04, p < .0001, N = 367		R^2 = .11 Adjusted R^2 = .09, F = 5.46, p < .0001, N = 367	

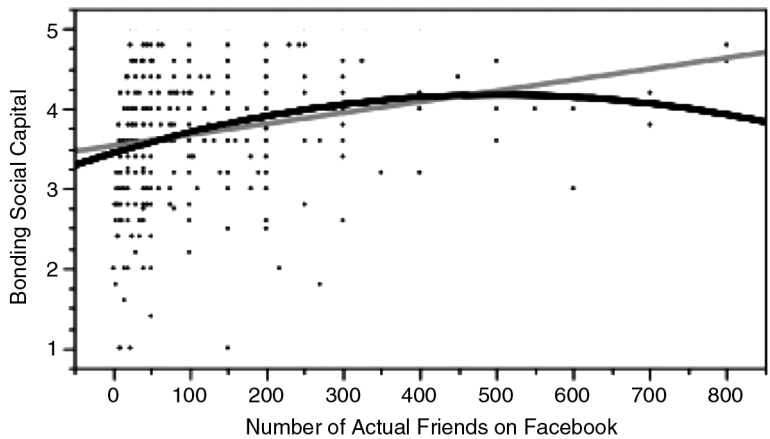

Figure 3. Relationship between number of actual friends on Facebook and bonding social capital

with their interaction partners. Our findings suggest that there are three distinct modes of interaction employed by our participants. 'Initiating' describes behaviors aimed at meeting strangers through Facebook. People who scored high on this strategy were more likely to report using Facebook to 'meet new people' and to browse, contact, Friend, and meet strangers in person. This suite of behaviors was the least common. On the other end of the spectrum, 'maintaining' behaviors include engaging in all the behaviors we examined – browsing, communicating, Friending, and meeting – with one's close friends, and was by far the most common. Finally, and perhaps most interestingly, 'social information-seeking' describes a suite of behaviors that revolve around using the site to discover more information about someone with whom the user shares some kind of offline connection. Individuals scoring high on this variable were more likely to agree with statements about using the site to 'check out' someone they met socially, to learn more about peers in their classes, and to learn more about other people living near them. They were also more likely to browse the profile of someone in their residence hall.

The social information-seeking strategy is intriguing because it encapsulates the organic interplay between offline and online communication found on many SNSs. People who report engaging in information-seeking behaviors are using the site to learn more about people around them. Although our measures do not enable us to claim with certainty what they are doing with this information or whether an offline interaction preceded the online investigation, we speculate that the identity information typically included in Facebook profiles may be used to trigger offline interactions. In this sense, Facebook use can act as a catalyst of, rather than a replacement for, offline interaction, supporting earlier research that suggested that 'highly engaged users are using Facebook to crystallize relationships that might otherwise remain ephemeral' (Ellison et al., 2007: 1162). Although early work on the subject employed 'online to offline' and 'offline to online' measures (Ellison et al., 2007), these connection strategies point to an evolved approach to describing interaction patterns which moves beyond dichotomous 'online'

and 'offline' social worlds and instead acknowledges these channels as deeply integrated communicative spheres.

For RQ2 and RQ3, we explored whether these strategies were significant predictors of perceptions of social capital. Social information-seeking was significant in both regressions, whereas including the other two strategies did not explain more variance, nor were they significant when included. We believe that initiating behaviors do not exploit one of the true benefits of SNSs, learning information about latent ties (Haythornthwaite, 2005) that share an offline connection or shared interest. It is also worth noting that using Facebook to connect with strangers is not the norm on the site, and thus users may be less receptive to these advances. Similarly, using Facebook to engage with close friends (maintaining) does not contribute to perceptions of social capital. Media multiplexity would predict that these strong ties are using a variety of channels for communicating (Haythornthwaite, 2005); thus, we would not expect Facebook-enabled interaction with close friends to have a large impact on either form of social capital as these social resources are available with or without Facebook.

Considering the significant influence of social information-seeking behaviors, we believe the social and technical affordances of Facebook support the conversion of latent ties to weak ties, in that the site provides identity information, enables communication between parties, and helps bring together those with shared interests. Haythornthwaite (2005) noted that technologies like the telephone, especially when combined with a directory, create latent ties. Examining how emerging adults use Facebook enables us to explicate how SNS communication practices can help transform latent ties into weak ties. Following Haythornthwaite (2005), we believe that communication technologies like the telephone can provide the *technical ability* to communicate, but this alone is often not sufficient for relationship development. Calling total strangers on the telephone is unlikely to result in the development of social relationships, because these individuals do not have access to social information that enables them to cultivate *socially relevant* interactions. However, unlike the telephone directory, Facebook also provides a rich collection of social context cues, such as mutual friends or shared interests, which can guide conversations to socially relevant topics and better enable participants to find common ground. These additional cues distinguish Facebook-enabled communication from digital 'crank calling'. We believe that the identity information in Facebook serves as a *social lubricant*, providing individuals with social information that is critical for exploiting the technical ability to connect provided by the site. Using Facebook to try to connect with 'total strangers' (initiating) did not have an impact on social capital scores, whereas using the site to 'check out' or 'learn more about' proximate latent or very weak ties (social information-seeking) did. The process by which Facebook can be used to scaffold productive social interactions is complex and is only partially illuminated by our data.

Our analyses suggest 'Friends' who are not considered 'actual' friends are unlikely to provide social capital benefits. For H1 and H2, we examined the role played by the number of total Facebook Friends and actual friends on the site. A simple quantity-centric view of social networks would assume that more Friends (regardless of tie strength) should result in higher levels of bridging social capital because more of these friends are likely to be bridging, or weak, ties and because higher numbers represent more potential sources of information and perspectives. However, this was not the case:

the number of Facebook Friends alone did not predict bridging social capital, but the number of actual friends did. Given the high median number of actual friends reported by our subjects (75, out of a median estimate of 300 total Friends), we surmise that not all actual friends are truly close ties or intimate friends, but are likely to be individuals with whom the user has a stronger offline connection. Our findings suggest that these perceived actual Friends are more likely to be productive from a social capital standpoint. One explanation for this stems from the ways in which individual users may be configuring their use of the site. Although Facebook users directly interact with only a small percentage of their Friends (Facebook Data Team, 2009; Golder et al., 2007), they can consume content from many others through the News Feed. Perhaps users employ their settings to 'hide' non-actual friends' activity from their News Feed (and, likewise, may have their updates, including requests for support, hidden by others), rendering them invisible within the system and thus not active contributors to social capital-building exchanges. The fact that total and 'actual' friends had different effects in our models suggests that future studies should probe self-reported total Friends, which are very highly correlated with Friend counts as extracted from server-level data (Burke et al., 2010), as well as perceptions of 'actual' friends.

Finally, our findings suggest a point of diminishing returns, even for those considered to be actual friends, in terms of the association with social capital once the number of reported actual friends exceeds the 400–500 range. At this size, it may be impossible to engage in the kinds of relationship maintenance necessary to get weak ties to provide useful information or other forms of support, as suggested by other research that examines theoretical limits on the number of stable social relationships humans can maintain (Dunbar, 1996). Alternatively, those people with such large numbers of reported actual friends may simply be improperly ascribing the moniker of 'actual' friend, and much of their network may, in fact, be comprised of very weak ties such that these individuals are no more likely than total strangers to offer any form of support. Future research, including qualitative methods, should address the mechanism behind this intriguing finding.

Conclusion

Emerging adults such as college students, who are experimenting with various identities, may benefit from the larger, more heterogeneous network that Facebook enables. The modern-day equivalent of Granovetter's (1973) 'strength of weak ties' may be found in these larger social 'supernets' (Donath, 2007) enabled by SNSs such as Facebook. This study sheds light on the processes by which SNSs can scaffold relationship development in both online and offline contexts. Our findings suggest that communication practices on the site impact social capital outcomes and underscore the importance of examining not just whether individuals use a particular site, but what they do with it and, as our findings regarding different 'connection strategies' and their relationship to social capital suggest, who they do it with. Our analysis considers friendship practices – both the articulation of 'Friendship' as evidenced on the site and how users perceive these relationships – and finds that users do differentiate between all Facebook Friends and 'actual' friends. These individuals may not all be close friends, but, as suggested by regressions showing the number of *actual* friends (but not the number of total Friends) predicts social capital,

they may be useful resources for providing individuals with a window into a diverse set of perspectives and information.

Limitations to this study include the fact that we studied just one social network site, Facebook, and thus our results cannot be generalized to other sites. Research suggests there might be differences among SNSs regarding how receptive users are to meeting new people (Dwyer et al., 2007). Additionally, survey data suffer from concerns regarding self-report and social capital is notoriously hard to measure. Our measures of social capital reflect limited dimensions of the concept and should be refined in future studies.

Sharing time and space with others supports relational development in multiple ways: social information about others is readily available through identity cues such as appearance, opportunities for sustained and repeated interaction are available, and commonalities among individuals are surfaced (Kraut et al., 2002). Technological tools for interaction, such as cell phones, e-mail, and SNSs, may emulate proximity in some cases. For instance, online dating profiles provide identity information, newsgroups enable those with shared preferences or interests to come together, and the telephone enables communication between distributed users. SNSs such as Facebook are well designed to support relational development in that they perform all three of these relationship-supporting tasks. Facebook enables individuals to find those with shared interests (e.g., through Groups or searchable profile fields). It enables self-expression through the profile, which consists of multiple opportunities to share information about one's cultural tastes, friendship networks, political affiliations, and other aspects of the self. Finally, Facebook provides multiple communication opportunities, both public and private, broadcast and targeted, lightweight and more substantive. We believe these social and technical affordances play an important role in helping students maintain and develop social networks and the social capital that is embedded within them.

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Notes

1. Following boyd and Ellison (2007), we capitalize Friends to indicate SNS contacts in order to distinguish it from colloquial understandings of the term. On Facebook, individuals invite other users to be 'Friends,' a relationship visible to others on the site and which enables two users to more easily communicate with and share content with one another.
2. For instance, Ellison et al. (2007) use a weak one-item measure for the 'on to offline' pattern, interpreted as describing relationships that start online and then migrate to face-to-face or other offline settings: the extent to which respondents agreed with the statement 'I use Facebook to

meet new people.' It is difficult to create survey items that adequately assess the online/offline directionality of relationship development given the multiple channels employed by users, confusion among participants about the meaning of various terms (e.g., 'online,' 'offline'), and difficulties in retrospective reporting.

3. At the time of data collection, Facebook allowed users to self-select into 'networks' associated with organizations, universities, or other grouping mechanisms. By default, privacy settings enabled anyone in the same network to view network members' profile.
4. We explored the relationship between demographic attributes and these behaviors, although these analyses are not reported here due to length restrictions.
5. We use median scores here to minimize the effect of outliers (e.g., one individual reported 1500 Friends).
6. Given the highly skewed distributions and limited variance of these other connection strategy scales, this result was not surprising. We attempted to transform the scales in various ways (e.g., log transforms and standardization), but none of these efforts yielded any significant results, so we can only conclude that these types of behaviors are not associated with any concomitant increase or decrease in social capital.

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