Realizing the Social Internet?
Online Social Networking Meets Offline Social Capital

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Abstract

Does Internet use have the potential to build social capital? Emerging evidence suggests that politically knowledgeable, interpersonally trusting, and civically engaged individuals share particular patterns of Internet use. In previous national survey studies, Internet use has been divided into a handful of excessively broad categories, and researchers have been unable to address newer, category-spanning Internet uses as well as the potential impact of individual websites. By examining the use of online social networks in a nationally representative sample of young people, this study explores the varied relationships between indicators of social capital and Internet use on a site-specific level (i.e. Myspace vs. Facebook). Indeed, differences between social networking sites are as large as those between more global categories of use (e.g., informational vs. social networking) and are robust to attempts to account for differences between the users of the sites. In explaining these relationships and exploring the differences between social networking sites, we suggest that website use induces a site-specific culture that can either encourage or hinder social capital.

Realizing the Social Internet?
Online Social Networking Meets Offline Social Capital

"Instant information creates involvement in depth" – Marshal McLuhan

The last century ushered in the world of instant information. Mass popularization of the radio, telephone, and television fundamentally changed the ways in which people interact. What was once the domain of the letters, parlor meetings, and soapboxes was now the realm of electronic communication. Messages could travel instantly from coast to coast and it became possible to broadcast ideas to a disparate audience in the comfort of their homes. With each of these technologies, a familiar debate emerged: Were the new media complementing, supplementing, or supplanting face-to-face community (Czitrom, 1982; Lowery & DeFleur, 1983; Rogers & Chaffee, 1983)?

The world of instant information conformed neither to the images of "dystopists," who believed that new media would destroy traditional community, nor to those of "utopists," whose vision is reflected in McLuhan's statement. Instead, specific patterns of media use have best explained the relationship between medium and society. People who spend inordinate amounts of time watching entertainment television tend to be less civically engaged, while those using the telephone to maintain social relationships tend to have broader social networks (Baym, Zhang, & Lin, 2004; Norris, 1996; Shah, McLeod, & Yoon, 2001c). Indeed, researchers have consistently found that both the medium used and the type of use can account for differences among individuals (McLeod, 2000; McLeod, Rush, & Friederich, 1968; Pasek, Kenski, Romer, & Jamieson, 2006; Shah et al., 2001c; Shah, Kwak, & Holbert, 2001a).

With the advent of the Internet, the debate over the effects of new media reemerged. While some envisioned a "virtual community," which would lower the costs of collective action and expand individuals' social networks (Rheingold, 2000; Delli Carpini, 2000), others worried about a new addiction, which would reduce social ties and draw users into a cycle of depression and loneliness (Kraut et al., 1998; Nie, 2001; Nie & Erbring, 2000). A decade after the popularization of the Internet, neither scenario has proven dominant. Instead, research reflects a medium that has some positive influence on users' social ties, but where only certain Internet uses contribute to social capital (Wellman, Haase, Witte, & Hampton, 2001; Zhao, 2006). Hence, differentiation has become a theme in furthering our understanding of Internet effects. Parsing between informational, communicative, recreational, social, product consumption, and financial management uses of information technology is quickly becoming a rallying cry in the literature (Bimber, 2000; Wellman et al., 2001; Zhao, 2006; Shah et al., 2001a).

This study marks a first attempt to isolate the relationship between social capital and one such niche category of Internet use, online social networking, in a nationally representative sample of young Americans. Social networking sites (SNSs) are a particularly intriguing category of Internet use because they are designed to emphasize social ties and have enormous prevalence in younger age cohorts (nearly 60% of 14- to 22-year olds report using some social networking site in the study).[1] Online social networks

[1]The Pew Internet & American Life Project found a similar 55% shortly thereafter in a slightly younger sample (Lenhart, Madden, Macgill, & Smith, 2007).

are expected to facilitate relatively high levels of social capital because users interact with each other and because online interactions typically reinforce offline social relationships (boyd, 2006; Ellison, Steinfeld, & Lampe, 2007). Further, two specific social networking sites dominate the virtual landscape. MySpace and Facebook represent the vast majority of young SNS users and provide a valuable opportunity to explore the possibility of site-specific relationships.

Social Capital

The collective action dilemma has emerged as a preeminent problem across the social sciences. While collective efforts and institutions form the bedrock of all societies, individual incentives to engage in these endeavors are notoriously lacking. Indeed, for any individual, rational choice theorists note that the incentives to free ride on public goods usually outweigh any added value of participation (Olson, 1965; Ostrom, 1990; 2000). Social capital theory provides an overarching explanation for how individuals may address the collective action dilemma. Combining the social psychological and sociological theories on social norms with economic claims about mutual, self-interested actions, Bourdieu (1986) and Coleman (1988; 1990) propose "social capital" as a framework for understanding where collective action solutions emerge.[2]

Putnam (1993) appropriated Coleman's social capital theory as a means for predicting institutional efficacy in democratic societies. Though the initial theory only purported to explain societal variation, it was quickly adopted as a method for assessing the civic and political health of individuals. Indeed, societal variation in civic engagement and interpersonal trust – Putnam's measures of choice – could much more easily be assessed at the individual level. Further, a variety of studies found "tight reciprocal relationship[s]" between these measures among survey respondents (e.g. Brehm & Rahn, 1997; Shah, 1998).

While social capital is a much broader phenomenon than is seen at the intersection of civic participation and interpersonal trust, the measures themselves have offered concrete indicators of the concept. Further declines in these measures have been a matter of persistent concern in American political science (Putnam, 1995; Putnam, 2000; Skocpol & Fiorina, 1999). If citizens are less connected to one another and less trusting, democracy suffers (Putnam, 1993). Similarly, a knowledgeable public provides a strong foundation for democracy; political knowledge has therefore been included in many analyses as an outcome of social capital (Putnam, 2000; Delli Carpini & Keeter, 1996). If citizens are motivated toward collective action but are unaware of the issues and implications surrounding that action, it is unlikely that they will act accordingly.

The strong relationship between social capital and political participation identified by Putnam (2000) and others has led many researchers to posit that civic socialization mechanisms that encourage civic engagement, interpersonal trust, and political

[2]A large literature in Sociology examines the role of social capital and its subsidiaries (e.g. network size, group membership, interpersonal trust, social norms, volunteer associations) and their relationship to ingroup and societal cohesion (for an in-depth analysis of the distinctions in this regard see Siisiainen, 2000; Putnam, 2000; Bourdieu, 1986). We derive our notion and measures of social capital from Putnam's (2003; 1995; 2000) work and from the literature that follows (i.e. Brehm & Rahn, 1997; Scheufele & Shah, 2000).

knowledge among individuals will, in turn, build a citizenry that is more interested, motivated, and active politically (Lake & Huckfeldt, 1998; Putnam, 2000; Shah et al., 2001a; Scheufele & Shah, 2000). Many have imagined the Internet as that socializing tool – a potential we evaluate in this manuscript. Indeed, in providing instant information and mass-to-mass communication, Internet use affords considerable civic potential.

Young people have been identified as contributing to America's declining social capital. Today's youth are marked by lower levels of community involvement, interpersonal trust, and political knowledge than older Americans (Miller, 1992; Putnam, 2000; Soule, 2001). Further, these lower levels seem to result from generational, rather than life cycle effects (Soule, 2001). As Putnam (2000) predicts, social capital declines have been coupled with diminishing political participation among young adults (Brody, 1978; Cassell & Luskin, 1988; Levine & Lopez, 2002). These decreases have been apparent not only with regard to voting, but across the entire spectrum of participation, including attending rallies, volunteering on campaigns, and running for office (Putnam, 2000). Some recent evidence from the 2006 and 2008 campaigns suggests that youth involvement may be turning a corner (Kirby & Marcelo, 2006; Marcelo & Kirby, 2008). Is it possible that online interaction is contributing to these newfound gains?

Internet and Social Capital

Internet communication has the unique ability to transmit information and build relationships among large groups of physically disconnected individuals. Indeed, these potential "virtual communities" were hailed as novel new ways to jump-start civic engagement and diminish the cost of collective action (Delli Carpini, 2000; Rheingold, 2000; Sproull & Kiesler, 1991). Early studies, however, identified just the opposite effect. Internet users were spending less time in social interactions and tended to become depressed and lonely as they engaged with the new medium (Kraut et al., 1998; Nie & Erbring, 2000). Similarly, young Internet users were less trusting than young people who were not on the Internet (Jennings & Zeitner, 2003).

More recent analyses suggest that an individual's overall Internet use has a generally positive relationship with his/her level of social capital. Kraut and colleagues (2002) conducted a follow-up analysis of the individuals from their initially pessimistic study. In contrast to their earlier work, they found that Internet users, over the long term, were no more depressed or lonely than non-users. Other evaluations have identified broader social ties among Internet users and have been unable to replicate findings of reduced interpersonal trust. Though views on the Internet have now come full-circle, the medium is no longer viewed as a panacea for civic society. Instead, many studies are finding evidence of limited social network expansion, but stop short of declaring Internet use a universal positive (Katz & Rice, 2002; Quan Haase, Wellman, Witte, & Hampton, 2002; Shah, Cho, Eveland Jr., & Kwak, 2005; Shklovoski, Kraut, & Rainie, 2004; Wellman et al., 2001).

Despite these checkerboard results, many researchers still see considerable promise in Internet use. Young people, in particular, have readily adopted various uses of the medium, and the Internet now accounts for a large portion of younger generations'

political information (Eveland Jr., Marton, & Seo, 2004; Kohut et al., 2000; Levine & Lopez, 2004). If the Internet can be used as a tool to build civic engagement, interpersonal trust, and political knowledge, it offers hope that we can stem the tide of youth civic disengagement. Yet simply encouraging young people to use the Internet is unlikely to make a difference. Indeed, most young people are already online (88% in 2006), and little evidence suggests that social capital has correspondingly skyrocketed (Pew Internet and American Life Project, 2006).

Differentiation

The inconsistent pattern of demonstrated "Internet effects" stems from a lack of methodological consistency across studies. Researchers need to be careful when comparing time diary studies with longitudinal analyses or contrasting the effects of types and hours of use. By examining Internet use as a broad category, it has been easy to conflate measures about "information" gathered on the Internet with measures of time spend on the computer. In response to these concerns, many have called for the differentiation of Internet use, where the subjects of measurement are more specifically and carefully addressed (Bimber, 2000; Shah et al., 2001a; Zhao, 2006). A variety of studies have categorized general types of Internet use that are thought to encompass the major differences between websites. Informational uses, social uses, recreational uses, communicative uses, and others are identified as fundamentally different media use patterns. By incorporating these categories into our analyses, their proponents argue, we can gain a more nuanced picture of Internet effects (Bimber, 2000; Shah et al., 2001a; Zhao, 2006). Indeed, the debate about broadcast television has evolved toward a similar "mixed bag" consensus (Norris, 1996; Pasek et al., 2006; Putnam, 2000).

Two studies in particular explore various Internet uses as they relate to civic outcomes. In one study, Shah, Kwak, and Holbert (2001a) divide Internet use into four categories: social recreation (i.e. playing an online game or participating in a chat room), product consumption, financial management, and information exchange (i.e. exploration of interests, searches for information, and sending email). They find consistently positive relationships between information exchange and social capital measures (trust, engagement, knowledge, friend network size, etc.) while identifying consistently negative correlations with social recreational uses. In the second study, Zhao (2006) divides Internet users into three categories: web users, email users, and chat users. Chat users demonstrate the most social connections followed by email users, but email users are the most likely to interact with their social connections offline. By examining users and uses in a more differentiated way, researchers have much more nuanced, and sometimes actively different, conclusions about Internet effects.

A number of studies have found that informational Internet use, in particular, is related to the products of social capital. Those using the Internet for information demonstrate higher levels of internal efficacy, political knowledge, and civic participation (Johnson & Kaye, 2003; Kenski & Stroud, 2006; Pasek et al., 2006; Eveland Jr. et al., 2004). Differing levels of civic engagement across various uses of the medium confirm the trend toward differentiation. But how much do we need to differentiate Internet use? The categories proposed by Shah, Kwak, and Holbert (2001a) and those

introduced by Zhao (2006) all seem to capture meaningful differences in media effects, but they also gloss over huge distinctions between site types, features, and designs. They also ignore user characteristics and their relationship with the medium.

Even if informational Internet use has the effect of building social capital – a conclusion for which we need a prospective analysis – it is unlikely that every informational website contributes equally to the endeavor. An understanding of generalized political knowledge is much more likely to emerge after encountering a news website than from a gossip outlet, for instance. Similar distinctions should be expected in each of the other generalized categories of use. Social engagement in an online bulletin board embodies fundamental differences from playing a computer game, though both fall into the social/recreational category outlined by Shah and colleagues (2001a). But before we embark on a prospective analysis, we must establish a more informed understanding of the differences among website users by building a theoretical foundation within which they can be compared. Expanding the available classifications and refining existing categories of use is critical in assessing social capital within virtual environments.

Social Networking Websites

Ideally, the most civically engaging uses of the Internet will be those that encourage interpersonal interaction, broaden social ties, and provide valuable information about how individuals can become more civically and politically involved. Social networking websites (SNSs) are particularly suited to these functions. Social networking websites represent a sizeable category of web services where users establish online personae through use of a "profile" and interact by "friending" and "messaging" other users over the Internet (boyd, 2006; Ellison et al., 2007). By utilizing these tools, participants are able to more efficiently interact with a larger network of acquaintances.[3] The social features of networking websites foster an environment that is ideal for virtual communities to expand and social capital to develop. Measures of SNS use consequentially may be an important category in examining potential Internet effects at the user level. In this case, we should find a positive relationship between SNS use and measures of social capital.

SNS use represents a boon for researching the interaction between social capital and Internet use because of the prevalence of the sites, especially among youth. Approximately 60% of our sample reported having a profile on at least one social networking site.[4] At the time of the study, MySpace and Facebook represented the 7th and 49th largest American websites respectively with MySpace recording over 51 million unique American visitors monthly and Facebook accounting for 14 million (both sites have grown since then) (ComScore Networks, 2006).

[3]The larger social networking sites, like MySpace, Facebook, and Friendster, also allow users to identify personal interests, acknowledge mutual friendships, and exchange contact information (Liu, Maes, & Davenport, 2006).

[4]Since the survey was conducted on a nationally representative sample of young people, this high rate of SNS use allows for a meaningful analysis.

Website Culture

Social capital differences between types of Internet use or between specific websites can emerge for three distinct reasons: Varying levels of social capital (or in our case, the interpersonal trust, civic engagement, and political knowledge that we consider outcomes of social capital) can be a product of the users of a site, the functions that a site offers, or some pattern of interactions among site users based on the site features. This first difference is likely to be closely tied to demographics. Even if individuals logging onto the New York Times website do nothing more to gain knowledge over those playing online games, we would expect a more educated, higher SES, more urban, and more civically engaged crowd to be reading the headlines in the first place.

The second difference between websites resides in their available features. This aspect of web use corresponds to the "type of use" categories outlined by Shah and colleagues, Zhao, and others. Indeed, categories of use like online social networking or news websites are marked by the availability of certain types of information and certain features that remain essentially constant across a category. News sites have news stories and often the ability to share a story with a friend (usually by email). Social networking site users create profiles and can share various types of text and multimedia information, utilizing connections between individuals. Additionally, chat enabled sites and similar social software programs allow users to send each other real-time text messages. We define these categories based on the features websites have. Since website features often induce usage patterns, it is common for users of similar sites to share patterns of use. Hence, users of a specific type of website may enjoy greater social capital if the use of features common to that category builds social capital.

Finally, the nature of the users, functionality, and history of a given website have the potential to emphasize certain traits among individuals who engage with the site. For example, individuals with strong social capital traits – i.e. highly trusting, politically aware, etc – may be drawn to a particular website and then proceed to interact with one-another and build upon those social capital measures. These interactions among users and the website create an interwoven environment of various behavior, communication, and information exchanges. We might imagine the unique interactions among users as a unique culture attributable to the site, indeed a 'website culture.'[5] This website culture has the potential to produce a virtuous circle that builds social capital and thus civic engagement, political knowledge, and interpersonal trust for sites with already active users.

Our measure of website culture can be understood as a novel type of "two-step flow" effect, where individual users provide information they receive from various media to others connected to them in a way that progressively informs the network (Katz & Lazarsfeld, 1955; Katz, 1957; Lowery & DeFleur, 1983).[6] Unlike the traditional model,

[5]The notion of "website culture" as a quantitative concept may seem inappropriate to some readers. We suggest, however, that interpersonal interactions via social networking websites have the potential to create a unique culture. While this is not a study of Culture per se, we hypothesize that unique website interactions lead to the outcomes we observe.

[6]While this is similar to diffusion of innovations theory (i.e. Rogers, 2003), we propose that the categories of progressively informed individuals no longer apply as information leaders generally spread information broadly and the individuals who are informed through the network are informed nearly instantaneously. For

we suggest that mass media is no longer the only source, and that information is frequently travelling through many opinion leaders before reaching the public. Instead of a linear diffusion model, we suggest that the network is recursive. Because the social network facilitates the flow of information (either on the network itself or by maintaining interpersonal ties), the diffusion of information on a particularly engaged network becomes viral. More people receive information on a more civically active social network and they are more likely in turn to pass on that information to others. This effect should create a virtuous circle where information flows reach farther than through traditional media. It should also be noted that the effects of such an information flow might extend beyond the most engaged individuals. Indeed, civically or politically relevant messages virally disseminated through the sites may reach an "inadvertent audience" (Robinson, 1976; Bennett & Iyengar, In Press).

This notion is distinctly different from either an initial differences hypothesis or from the proposal that website effects depend on the type of site. Selection differences between site users should remain static despite use. In these cases, the relationship from site use to a social capital measure is, in fact, a spurious one. Alternatively, differences driven by types of website use are a meaningful category of Internet effects. In these cases, using a particular type of website may be exposing an individual to a particular type of political information that could increase political knowledge or encourage involvement. Our cultural approach proposes that sites that do not directly offer information may still come to provide it. This conclusion is hardly a leap of faith when we consider that social interactions among individual users facilitate the sharing of information within the site. From this perspective, such sites could act as a meaningful public square, strengthening the web of influence among site users. Our social capital outcomes, therefore, would be partially a function of the individuals drawn to that site and partially a function of the site's ability to facilitate the exchange of information. Ideally, SNSs should operate in this third context. If website culture, as outlined here, is responsible for any of the variation in social capital among Internet users, the difference should be best observed by comparing individual websites within a given "type of use" category.

Facebook and MySpace

Despite the large feature set shared across most common social networking websites, the sites also have important differences. The two largest such sites, Facebook and MySpace, which we compare in this paper, differ with regard to the individuals who use the sites and the information that they share. These differences stem from different histories and different target populations. Though both offered very similar features at the time of the study (they have since diverged in their marketing strategies), Facebook was initially targeted towards college students and thus focused on connecting users through their high school, business, and college communities, while MySpace catered to musical interests and tended to reinforce connections that coincided with shared interests rather than shared physical community (boyd, 2007b; boyd, 2007a; Hargittai, 2007). Facebook's community began at elite colleges, with the site initially open only

this reason the diffusion of innovations model may be a less appropriate analogy.

to Ivy League institutions (boyd, 2007b). Both sites used a similar 'viral marketing' strategy, spreading in a peer-to-peer manner. Though Facebook's popularity was no longer preponderantly elite by the time of the study, the history of the network would suggest that Facebook should have a slightly more civically engaged and politically astute user base (Hargittai, 2007). Moreover, Facebook's emphasis on having its users replicate their real-life identities (through internal policing) and communities (through the provision of college, high-school, workplace, and regional network affiliations) tends to reinforce existing communities and information networks (boyd, 2007b; Hargittai, 2007). This scenario could turn moderate initial differences between the user bases of Facebook and MySpace into a visible website culture gap (see Table 2 below). Facebook users sharing information would inadvertently maneuver their advantages in social capital and their stronger 'real-life' ties into a more efficacious community. Indeed, some early evidence on intensity of Facebook and MySpace use in non-representative samples lend support to this notion (Ellison et al., 2007; Hargittai, 2007; Bode, 2008; Valenzuela, Park, & Kee; Nyland, Marvez, & Beck, 2007).

The Current Study

To examine the potential impact of SNS use, this study includes four assessments of variously differentiated Internet use in predicting civic engagement, political knowledge, and interpersonal trust. First, informational Internet users are compared to the general public with regard to these three outcomes. Informational Internet use establishes a baseline to account for what has traditionally been the single most civically positive use of the medium. Second, this study compares informational Internet use with the use of social networking websites. If social networking websites build social capital, use of these sites should be positively related to each of the outcome variables. These two analyses allow us to place the use of social networking websites in the "types of use" paradigm.

If 'website culture' does indeed explain differences between the social networking websites measured, dummy variables for Facebook and MySpace use as well as the interaction between the two will provide better predictions than the overall SNS measure. Because the sites provided similar features, comparing the differences that remain after controlling demographics offers evidence regarding differences that may be due to website culture. Finally, we use genetic matching in an attempt to account for initial differences between users and non-users of Facebook. By only examining the individuals who our model predicts would be equally likely to join Facebook, we mitigate the potential that self-selection effects might drive our results.

Hypotheses

A broadening literature on the social correlates of Internet use suggests that the Internet has significant potential to build social capital. Reflecting much of this literature, we expect that young people using the Internet for information will exhibit higher levels of civic engagement, political knowledge, and interpersonal trust than non-users even when controlling for demographics (H1). Reflecting our expectation that social

networking sites will be a particularly engaging use of the Internet, we expect that civic engagement will be more prevalent among individuals who use social networking websites frequently, even when accounting for overall tendencies toward informational Internet use (H2). Facebook and MySpace differences are expected to result from both to user disparity (H3) and from our website culture (H4). We use matching to increase our ability to account for initial differences between the groups.

Methods

This study uses data from the 2006 National Annenberg Survey of Youth (NASY), a survey conducted by the Adolescent Risk Communication Institute at the Annenberg Public Policy Center of the University of Pennsylvania. The survey involved 900 telephone interviews with respondents conducted between May 1st and August 10th, 2006. Within each household, interviews with the 14 to 22 year old with the most recent birthday were requested. In households where a potential respondent was away at school, the interview was either scheduled when the respondent was home or by phone. For those under 18 years of age, parental permission was obtained. An incentive of $10 was provided to all participants. The survey was approved by the Institutional Review Board of the University of Pennsylvania. Schulman, Ronca, & Bucuvalas, Inc. conducted the interviews. Descriptive results of the survey are reported after weighting by number of telephone lines, region, sex, race, age and education. The response rate for the survey (AAPOR formula 3) was 48%. The unweighted sample was not far off from U.S. Census Bureau demographic estimates for this age group.

Independent Variables

The focus of this study was to determine the relationships between social networking websites and a variety of outcome variables. Five measures were used to assess the impact of general social networking as well as the differential impact of the two most popular social networking websites. A measure of overall use of social networking asked respondents to identify how often they "use online journals like Blogger or social network sites like Myspace or Facebook." Respondents' registered use of the sites from "never" (0) through "most days" (3) (Mean = 1.42, SD = 1.30).[7] Respondents were also asked how frequently they "use a computer to go online to get information" (similarly coded; Mean = 2.39, SD = .93). To assess relationships with specific sites, respondents indicated "which, if any, of the following social network sites [they] use[d]?" Two dummy variables identify users of Facebook (Mean = .16) and MySpace (Mean

[7]Many of the blogging websites could be considered social networking sites for those writing entries as the definition of SNS sites that we used was sites that had a user profile and facilitated the exchange of information among connected individuals. Common blogging sites in this age group include Xanga and LiveJournal, which function as a hybrid between the two types of sites. Additionally, the vast majority of those answering the question were SNS users, with only 2% of our sample reporting blogging site use but no use of Facebook or MySpace. The results obtained for all analyses in this study were also repeated excluding those identifying only blogging sites on the follow-up question "which, if any, of the following social network sites do you use?" All relationships were consistent with the findings reported for the full measure.

= .46). Finally, a dummy variable for the use of both services is included to assess possible interaction effects (Mean = .09).

Outcome Variables

Three dependent variables evaluated the impact of social networking sites. Respondents reported on their individual levels of civic engagement, interpersonal trust, and political knowledge. Civic engagement was measured as the frequency with which they report "participat[ing] in a club or other extra-curricular activity." The item is coded on a three-point scale ranging from "never" (0) to "most days" (2) (Mean = .93, SD = .82). Interpersonal trust was assessed with four-point scales for two items measuring whether adolescents agree or disagree with the statements (Strongly disagree = 0, strongly agree = 3) that most people "will take advantage of [them] if they get the chance" (Mean = 1.55, SD = 1.05) and that "most people only look out for themselves" (Mean = 1.80, SD = .94). The items were reverse coded, standardized and averaged to produce an index for interpersonal trust (Pearson's r = .336).

To assess political knowledge, we asked six items that tapped general understanding as well as current knowledge of the U.S. political system: (1) "Do you know what office Dick Cheney holds? If yes, what is it?" (2) "What are the major political parties in this country?" (3) "Which party has the most members in the House of Representatives?" (4) "Which party, as far as you know, is more conservative?" (5) "Whose responsibility is it to determine if a law is constitutional? Is it the President, the Congress, or the Supreme Court?" and (6) "How much of a majority is needed in the House and Senate to override a presidential veto? Is it one-half, two-thirds, or three-quarters?" Questions 3 and 4 were only asked of respondents who named the Democrats and Republicans as major political parties in question 2 (Delli Carpini & Keeter, 1993; 1996).

A political knowledge scale was created by summing correct answers with incorrect/don't know/refused responses treated as incorrect. Respondents had to provide the correct office for Dick Cheney in order to receive a correct score. Items 3 and 4 were scored as incorrect if respondents did not name the two parties in question 2. Item 2 was not scored separately. The resulting 5-item scale was reliable with a Cronbach's alpha of .68. On average, respondents answered 2.51 items correctly (SD = 1.65).

Control Variables

In assessing the correlates of certain types of Internet use, demographic variables are important in controlling for availability and usage of the medium. In this study we control for racial-ethnic identity, gender, median neighborhood income (imputed by zip code), age, and educational status of respondents. The weighted sample was 50.8% male, 17.1% Hispanic, 14.6% black, 6.7% non-black/non-white/non-hispanic identifiers. Whites and females served as reference groups. The average age was 17.8 years old (SD = 2.46). The unweighted sample closely approximated the weighted one with regard to demographic measures. Demographic profiles of users of Facebook and MySpace are provided in Table 2.

In the weighted sample, 25.1% of respondents were current college students, 23.9%

of respondents were not currently in school, and 52.0% reported being in high school, which was assessed as our reference group.[8] Finally, neighborhood household income was measured by matching self-reported zip codes with the 2000 U.S. Census Bureau median household income estimates (Mean = $45,320, SD = $17,489). Approximately 4% of the sample could not provide a valid zip code. We assigned the mean sample value to these cases (N = 36).

Analysis

Four separate analyses compare the relationships between social networking and our outcome variables. First, demographic variables and informational Internet use are used to predict each of the three outcome variables in ordinary least squares (OLS) regressions. This analysis will confirm the previously observed strong relationship between informational Internet use and social capital (see above). Second, the measure of overall SNS use is introduced into each of these regressions. If SNS use is related to social capital, it should remain correlated after controlling for both demographics and informational Internet use. A third series of regressions examines the differences between MySpace and Facebook as social networking websites. These regressions include demographic variables, informational Internet use, and dummy variables representing Facebook use, MySpace use, and the use of both services.

Finally, the differences between Facebook users and non-users are explored using propensity score matching. Because Facebook users look substantively different from the general population of 14- to 22-year-olds (Table 2), it is possible that standard demographic controls will not sufficiently account for the initial differences between users and non-users of the site, and that those differences may be driving any relationship. Using our exogenous control variables (as well as additional measures for level of schooling achieved, urbanicity, and squared terms for income, age, and schooling), we calculate the probability that any individual will be a Facebook user. We then conduct genetic propensity score matching using MatchIt for R (Ho, Imai, King, & Stuart, 2008). Each Facebook user is matched with up to two non-users in the sample using the "genetic" matching procedure – unmatched individuals are dropped (N = 280 after matching (122 Facebook); Ho, Imai, King, & Stuart, 2006; Dehejia & Wahba, 2002). This procedure "uses an evolutionary algorithm . . . that maximizes the balance of observed potential confounders across matched and treated units" (Diamond & Sekhon, 2005, p. 2).[9] We then repeat the final regressions using only those individuals who were matched. Propensity score demographics are shown in Table 3. By matching, we are able to ensure that the relation between Facebook use and our outcomes are not attributable to differences in the types of individuals who are nearly certain to use Facebook versus those nearly certain not to use it (Dehejia & Wahba, 2002).

[8]Educational status was assigned based on respondents' indications that they were currently attending school and the level of school that they reported attending, if they were still in school.

[9]While genetic matching is fundamentally exploratory (see Ho, Imai, King, & Stuart, 2008), this does not bias results as we are not predicting the outcomes in the study. Indeed, the better balance achieved, the less likely that a spurious relationship will appear (see Diamond & Sekhon, 2005; Ho, Imai, King, & Stuart, 2008).

Results

Baselines were established to determine how much of a role SNS use has in predicting social capital variables (Table 3). The Baseline regression shows the results of regressing each outcome measure onto demographics and informational Internet use. As hypothesized (H1), use of the Internet for information was positively related to civic engagement (B = .167, s.e. = .030) and political knowledge (B = .283, s.e. = .056) after controlling for demographic variables. A corresponding relationship between informational Internet use and interpersonal trust was not apparent, though results tended in that direction as well (B = .048, s.e. = .031).

To understand how the broad category of social networking sites relates to our outcomes, we include our general SNS measure as a predictor (Table 3, General SNS). Though online social networking was strongly related to offline civic engagement (B = .079, s.e. = .021), SNS use was negatively related to interpersonal trust (B = -.062, s.e. = .022) and unrelated to political knowledge (B = .017, s.e. = .041; H2). These data suggest that aggregate SNS use is not all that important in predicting our social capital measures.

A more interesting pattern emerges when social networking is disaggregated by website used (Table 3; Sites). As predicted, Facebook and MySpace did not operate consistently across outcomes (H3 and H4). Facebook use is strongly related to greater civic engagement (B = .491, s.e. = .112) and political knowledge (B = .859, s.e. = .209). Facebook users were also somewhat less trusting than non-users, but the relationship was not significant (B = -.194, s.e. = .116). MySpace users, however, were not significantly more likely to engage in clubs than non-users (B = .043, s.e. = .058) and were less likely to express general trust in others (B = -.192, s.e. = .061). MySpace users also demonstrated markedly lower levels of political knowledge than non-users in their cohort (B = -.246, s.e = .109).

While significant initial differences were observed between Facebook and MySpace users (H3; see Table 2 above), those initial differences do not account for the relationship with measures of social capital. When we use matching to control for initial differences between Facebook users and non-users (Table 99), neither the direction nor substance of the relationship between Facebook and any of the outcome variables changed (Table 3, Matching). If two individuals with the same propensity score are compared, the individual using Facebook would, on average, be more than one-half category more likely to engage in offline clubs and groups (B = .66, s.e. = .14) and would usually answer an additional knowledge item correctly (B = 1.16, s.e. = .25). Full regressions with all demographic variables are shown in Appendix A.

Discussion

This study provides the first empirical analysis of the relationship between online social networking and offline social capital in a nationally representative sample. We build on previous analyses stressing the need to differentiate between various uses of the Internet. Those who used the Internet for social networking or for information showed demonstrably different patterns of civic engagement, interpersonal trust, and political

knowledge. Additionally, the study echoes and refines calls for further differentiation (Lupia & Philpot, 2005). Large differences between Facebook users and MySpace users undermine the suggestion that general categories of use, such as social networking or information searching, can be meaningfully examined. Instead, we suggest that many websites have distinct histories, structural features, and site-specific attributes that induce a unique website culture. These cultural features, we contend, in turn influence the effects that a given site can have on its users as well as the type of users that are drawn to the site.

Building Social Capital Online?

Reflecting earlier studies, we find that young people using the Internet for information do indeed report more indicators of social capital than their non-using friends (H1) (Johnson & Kaye, 2003; Kenski & Stroud, 2006; Pasek et al., 2006; Eveland Jr. et al., 2004). Individuals who frequently use the Internet for information are more likely to participate in offline clubs and groups and to demonstrate high levels of political knowledge. Interestingly, the relationship does not hold for interpersonal trust. However, once we control for the use of social networking sites, we find that informational Internet use is positively related to trust.

Our results for social networking websites are less conclusively positive than those of informational use. Though SNS users report much higher levels of civic engagement than non-users, they do not demonstrate additional political knowledge, and actually say that they are less trusting of others (H2). Though these results neither confirm nor deny the existence of site-specific differences, they are quite consistent with Shah et al.'s work on Social-Recreational Internet uses (2001a). They also allow us to put the use of social networking sites into the "types of use" model for Internet effects.

The third analysis, however, portrays a very different picture. The vast discrepancies between users of Facebook and MySpace cannot be due to types of site use, as they are both similar social networking sites. In fact, the specific sites make at least as much of a difference as the types of site. This indicates support for one or both of the hypotheses predicting site-specific differences (H3 and H4) and provides a cautionary note for those attempting to aggregate types of Internet use. There are differences in the sites that need to be accounted for when assessing Internet effects. Two possibilities remain, however, for how specific websites may relate to differing levels of social capital. The discrepancies could be introduced either by the individuals who join the sites, or as a function of what the sites do.

Users of Facebook and MySpace are quantifiably different. Indeed, Facebook users in this study were more likely to be in college, were generally older, and were more affluent than MySpace users (Table 2); these results are consistent with some early qualitative and non-representative studies (boyd, 2007b; Hargittai, 2007; Nyland et al., 2007). These differences, however, were robust to demographic controls and had only a moderate impact on social capital measures in the first place (H3). To further reduce the potential impact of other unmeasured demographic differences between these two groups, differences between the sites were examined by matching individuals on their demographic propensity to use each site. The similarity of these results to those

in the non-matched sample suggests that initial differences in users do not account for the relationship between the use of particular websites and social capital. Hence some of that difference is likely attributable to website culture (H4).

Interpreting Website Culture

At some level it seems far-fetched to claim that Internet use of various types and of diverse contents may have the potential to encourage civic engagement. While it may seem reasonable for the New York Times to provide readers' political information, a direct connection between online social networking and political knowledge is less apparent. While more recent trends such as Facebook's 2008 Election Day taskbar reminding individuals to vote or the inclusion of political candidate profiles is suggestive, it is not always clear who is receiving this information. Indeed, this paper's obvious critique comes in the inability of a cross-sectional design to provide causal evidence that website culture is in any way herding individuals toward greater civic engagement. Correlational evidence can never completely rule out self-selection, but our evidence suggests that self-selection is not the entire story.

Undoubtedly, self-selection plays an important role in determining who joins what site. This is especially true as sites gain diverging reputations (e.g. music for MySpace or college activities for Facebook). But our results and the results of others suggest that some website effect is present. First, the sheer strength of the relationship between social capital outcomes and specific websites over and above that of traditionally important demographic variables would necessitate a hugely important series of omissions. The persistence of equally strong effects despite propensity score matching is unlikely if initial differences are to blame. While our propensity score matching is imperfect, the traditionally strong controls used for our matching had little effect. Further, findings by Ellison et al. (2007) and Bode (2008) that the intensity of Facebook use relates to social capital among a non-probability sample seems to belie an initial differences hypothesis.

Limitations and Future Studies

Exploration of Internet effects has suffered from a lack of strong longitudinal analyses – this study is no exception. The cross-sectional analysis provided in this paper cannot discriminate between whether social networking websites are encouraging civic involvement or whether civically involved youth are simply more likely to join social networking websites. Nonetheless, this analysis does provide some evidence that these sites could provide a means to successful engagement.

Researchers exploring Facebook will note that the site gained its early following in the elite college market. This initial audience could bias our comparison of Facebook and MySpace. The rapid expansion of Facebook between 2004 and 2006, opening to almost all institutions of higher learning and eventually high schools and workplaces as well, brought in many users who should offset any such effect. Additionally, controls used in this study were designed to best approximate what we believed would be the notable differences between the general Facebook population, the general MySpace

population, and others. Education and socio-economic status should account for the vast majority of residual differences. Finally, inclusion of the informational Internet variable should further reduce the likelihood of such an effect, as such use is likely to be more consistently biased toward students at elite colleges.

This study makes a number of recommendations for future analyses of differentiated Internet use in the Millennial Generation. The first is that such studies should be longitudinal. Though case studies can provide valuable insights into overarching patterns and techniques like propensity score matching can provide some leverage for causal inference, this analysis suggests that such broad trends may be misleading. The differences identified in this study between Facebook and MySpace are better resolved through experimental and quasi-experimental designs, where users' social capital is compared to changing patterns of Internet use.

The second critical recommendation of this analysis is the need to address website culture. Not all websites within a general category of use behave similarly. To account for possible website culture effects, studies must do one of two things. For large-scale studies of multiple Internet uses, researchers should include analyses of individual websites within each broad category. This step will ensure that sites of a given type are indeed behaving similarly across outcome measures. For small-scale studies on Internet effects, research should be examined within the confines of specific websites. Simply encouraging users to join any social networking site in a study would prove a problem if some were to join MySpace and some Facebook.

On some level, we remain limited in our ability to explicate the enormous scope of Internet use and of Internet-mediated outcomes. While we caution that types of use examined in previous studies are overly broad and can lead to errant conclusions, it does not follow that all users of a similar site behave similarly. It would be unreasonable to expect that every Facebook user is experiencing a similar benefit for political knowledge. Indeed, for some individuals, Facebook is likely replacing educational and social interactions that might be even more beneficial. Understanding the different patterns of use among individuals using each site is beyond the scope of our currently available data, but may reveal a network of users as diverse as the sites themselves. Such questions do not discount site-based differences, but will help to refine our science in the future.

Conclusions

This study constitutes an initial exploration into the relationship between civic engagement and social networking websites. Contrary to expectations, use of social networking sites appears to relate inconsistently to measures of social capital. Overall, SNS users are more civically engaged but less trusting than non-users. Exploration of the effects of Facebook and MySpace, the two largest social networking sites, suggests that social networking cannot be examined in the aggregate. Facebook users demonstrated greater political knowledge and civic engagement while MySpace users generally had lower knowledge and were also less trusting of others.

We interpret these differences as the result of varying "website cultures" across social networking sites. Particularly, differences in anonymity and connection to "real-life

networks" are presumed to underlie differences in users' social capital. If the Internet is indeed having an effect, that effect must be measured within the confines of a particular site-specific culture. Differentiation merely to the level of general usage types is insufficient for parsing these effects.

The results of this study give little weight to the notion that online social networking may be the key to Rheingold's idealized "virtual community." Nonetheless, differences between social networking sites suggest that they may have some ability to encourage social capital. If this is indeed the case, emerging social and interactive Internet uses may yet provide a means, though likely not a panacea, for addressing declining civic engagement and energizing the Millennial Generation toward greater civic and political participation.

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Table 1: Internet Usage and Outcome Distributions

Variable		Total %
Informational Internet Use		
	most days	63.3
	some days	19.3
	less often	10.5
	never	6.9
SNS Use		
	most days	32.9
	some days	15.8
	less often	11.6
	never	39.6
Facebook		16.0
MySpace		46.1
Both SNS Sites		8.7
Civic Engagement		
	most days	30.2
	some days	33.1
	never	36.8
People will take advantage of me		
	strongly agree	22.7
	agree	30.0
	disagree	26.6
	strongly disagree	20.5
	(missing)	0.2
Most people only look out for themselves		
	strongly agree	23.9
	agree	43.8
	disagree	20
	strongly disagree	11.8
	(missing)	0.1
Political Knowledge (correct)		
	Cheney Office	52.6
	House Majority	48.9
	More Conservative	42.2
	Law Constitutional	52.1
	Veto Override	55.5

Notes: N = 900

Table 2: Demographics of Users of Facebook and MySpace and Those Using Neither Site

	Neither Site	MySpace	Facebook	Both
N	420	415	144	79
Male (%)	51	51	43*	40*
White (%)	59*	61	75*	70*
Black (%)	19*	11*	10*	9*
Hispanic (%)	16	20*	8*	11*
Other (%)	6	8*	7	9*
Not in School (%)	32*	18*	7*	8*
High School (%)	51	57	21*	27*
College (%)	17*	25	72*	66*
Mean Income in Zip Code	$43,409	$45,678	$51,799*	$46,299

Note: Mean values in each category which are significantly different ($p < .05$) from the mean all other individuals are starred. Categories are non-exclusive, percentages are by column. Table uses weighted data.

Table 3: Regressions of Social Capital Outcomes on Internet Uses

	Civic Engagement							
	Baseline		General SNS		Sites		Matched	
	Coef	s.e.	Coef	s.e.	Coef	s.e.	Coef	s.e.
Internet Use	.147*	.030	.110*	.031	.134*	.030	.136	.087
SNS Use			.079*	.021				
Facebook					.491*	.112	.658*	.138
MySpace					.043	.058	.149	.132
Both					-.103	.141	-.301	.191
R- squared	.116		.129		.145		.194	
N	900		900		900		280	

	Interpersonal Trust							
	Coef	s.e.	Coef	s.e.	Coef	s.e.	Coef	s.e.
Internet Use	.048	.031	.077*	.032	.074*	.031	.173*	.082
SNS Use			-.062*	.022				
Facebook					-.194	.116	-.005	.130
MySpace					-.192*	.061	-.025	.124
Both					.142	.147	-.052	.180
R- squared	.054		.062		.067		.078	
N	899		899		899		280	

	Political Knowledge							
	Coef	s.e.	Coef	s.e.	Coef	s.e.	Coef	s.e.
Internet Use	.283*	.056	.275*	.059	.297*	.056	.424*	.161
SNS Use			.017	.041				
Facebook					.859*	.209	1.161*	.254
MySpace					-.246*	.109	.316	.244
Both					.086	.264	-.525	.352
R-squared	.233		.233		.266		.246	
N	900		900		900		280	

Note: Significant results ($p < .05$) starred. Demographics controlled.

Table 4: Regressions of Social Capital Outcomes on Internet Uses

	Matched Facebook	Matched Matched Non-Facebook	Difference Matched	Difference Unmatched
N	122	158	—	—
Male (%)	38	37	0	10*
White (%)	71	70	-1	-16*
Black (%)	12	12	0	6
Hispanic (%)	9	8	-1	1
Other (%)	9	9	0	9*
Not in School (%)	9	9	0	20*
High School (%)	25	25	0	36*
College (%)	66	66	-1	-56*
Mean Age (yrs)	19.1	19.2	.1	1.8*
Mean Income in Zip Code	$52,389	$51,210	-$1,179	$7,734*

Note: Significant differences ($p < .05$) starred. Percentages are by column.
Propensity score data is not weighted to match population characteristics.

Table A.1: Full Regression Results Into Civic Engagement

	Civic Engagement							
	Baseline		General SNS		Sites		Matched	
	Coef	s.e.	Coef	s.e.	Coef	s.e.	Coef	s.e.
Constant	1.054	.278	.985	.277	1.154	.277	.810	.709
Male	.062	.052	.071	.052	.078	.051	.045	.100
Hispanic	-.139	.072	-.150	.071	-.114	.071	.142	.183
Black	.027	.076	.038	.076	.047	.076	.356	.151
Other Race	.044	.105	.048	.105	.074	.104	.254	.179
Income	.000	.000	.000	.000	.000	.000	.000	.000
Age	-.022	.016	-.019	.016	-.027	.016	-.022	.036
College	-.135	.089	-.161	.089	-.274	.092	-.299	.147
Not in School	-.439	.086	-.423	.085	-.415	.085	-.534	.221
Internet Use	.147	.030	.110	.031	.134	.030	.136	.087
SNS Use			.079	.021				
Facebook					.491	.112	.658	.138
MySpace					.043	.058	.149	.132
Both					-.103	.141	-.301	.191
R- squared	.116		.129		.145		.194	
N	900		900		900		280	

Table A.2: Full Regression Results Into Interpersonal Trust

	Civic Engagement							
	Baseline		General SNS		Sites		Matched	
	Coef	s.e.	Coef	s.e.	Coef	s.e.	Coef	s.e.
Constant	.268	.287	.332	.286	.334	.289	-1.737	.667
Male	-.016	.054	-.023	.053	-.022	.053	-.039	.094
Hispanic	-.065	.074	-.057	.074	-.053	.074	-.057	.172
Black	-.382	.079	-.391	.079	-.403	.079	-.296	.142
Other Race	-.173	.109	-.176	.108	-.171	.108	-.004	.169
Income	.000	.000	.000	.000	.000	.000	.000	.000
Age	-.019	.016	-.022	.016	-.021	.016	-.030	.034
College	-.038	.092	-.017	.092	-.003	.095	.084	.138
Not in School	-.164	.088	-.177	.088	-.179	.088	-.062	.208
Internet Use	.048	.031	.077	.032	.074	.031	.173	.082
SNS Use			-.062	.022				
Facebook					-.194	.116	-.005	.130
MySpace					-.192	.061	-.025	.124
Both					.142	.147	-.052	.180
R- squared	.054		.062		.067		.078	
N	899		899		899		280	

Table A.3: Full Regression Results Into Political Knowledge

	Civic Engagement							
	Baseline		General SNS		Sites		Matched	
	Coef	s.e.	Coef	s.e.	Coef	s.e.	Coef	s.e.
Constant	.625	.523	.610	.525	1.011	.519	-1.875	1.31
Male	.246	.098	.248	.098	.278	.096	-.199	.184
Hispanic	-.900	.135	-.902	.135	-.816	.133	-.344	.336
Black	-.885	.144	-.883	.144	-.871	.141	-.826	.277
Other Race	-.502	.198	-.501	.198	-.427	.195	-.640	.330
Income	.000	.000	.000	.000	.000	.000	.000	.000
Age	.037	.030	.038	.030	.019	.030	.158	.067
College	.769	.167	.763	.168	.481	.171	-.074	.271
Not in School	-.066	.161	-.062	.162	-.027	.159	-.584	.408
Internet Use	.283	.056	.275	.059	.297	.056	.424	.161
SNS Use			.017	.041				
Facebook					.859	.209	1.161	.254
MySpace					-.246	.109	.316	.244
Both					.086	.264	-.525	.352
R- squared	.233		.233		.266		.246	
N	900		900		900		280	