

THE STRENGTH OF WEAK TIES IN ONLINE SOCIAL NETWORKS

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Thanks to my mother and father, who always support me to the best of their abilities.

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ABSTRACT

The use of online social networks such as Facebook.com are hypothesized to be affecting Robert Putnam's (1995) theory of social capital. The research method is modeled after Dhavan Shah's (2005) Information>Communication>Participation model.

This study found that users of these sites tend to have an equal or greater likelihood of engaging in citizen communication or civic participation if they use social networks for informational purposes. Qualitative data indicates that users of online social networks communicate over greater temporal and geographic distances to maintain what Mark Granovetter (1973) calls weak ties.

This study gives insight on how information is being shared between digital natives in online social networks, and how such information dissemination leads to the generation of social capital. Future studies focusing on specific features of online social networks that enable communication and civic participation are recommended, as is a comparison between levels of social capital creation between users and non-users of online social networks.

Introduction

This research measures the impact of online social network use on Putnam's (1995) theory of social capital by illuminating the process by which users of online social networks create and utilize Granovetter's (1973) weak ties to amass social capital. In an attempt to understand the dynamics of these inter-related theories and the way that the Internet is impacting them, case studies of online social networks will be reviewed.

Comparisons to pre-Internet levels of civic-engagement and key socioeconomic characteristics suggest that communicative uses may predominate online. This is important, given the centrality of volunteerism and community activism in the debate over social capital. The relationship between organization membership and Internet access indicates that Internet access has positive effects on several factors influencing civic participation (Jennings, 2003).

The ramifications of this research are especially relevant to youth, as almost three-fourths of this age group sees the web and its features as *the* most useful source of information (Delli Carpini, 2000). Internet use is disproportionately high among this generation, for whom the Internet and new forms of digital communication have always been an integral part of life. Individuals belonging to this generation are also much more likely to use the Internet's newer and more complex features, including but not limited to instant messaging programs, P2P file sharing systems, blogs, wikis and online social networks (Presky, 2001).

This increased likelihood can be seen in rates of usage of one popular online social network, Facebook.com. Created in 2004 at Harvard University, Facebook.com had grown to support an additional 882 U.S. colleges in only two years. More significantly, by that time

it had an average market penetration rate of an astonishing 85%. In other words, approximately 3.85 million college students had joined the site in only two years – and at that point, it was still growing by about 20,000 students each day (Arrington, 2006). Researchers have pointed out byproducts such as computer literacy, communicative skills and community building.

Shah (2005) created a model which showed how information seeking - online or off-line - influences citizen communication, which in turn spurs civic participation. The creation and mass adoption of online social networks may explain the “distinctive and widespread rise” in community and civic responsibility among college freshmen (Marklein, 2006).

Are online social networks mitigating against the decline in social capital bemoaned in ‘Bowling Alone: America’s declining social capital’ (Putnam, 1995)? Putnam himself has given cause to consider this possibility when he stated that “by far the best predictor of philanthropy, for example, is not how much money you have, but how many clubs you go to. There is a very strong affinity between social connectedness and altruism” (2001).

An analysis of online social network user behavior offers unique insight into the role weak tie seeking and social network messaging play in the amassment of social capital. If users of these sites are creating and utilizing weak ties in novel ways, this might prove to be a significant generator of social capital.

The purpose of this study is to ascertain what effect the creation and utilization of weak ties in one’s social network has on civic engagement. The literature from this thesis is drawn from three areas: mass communication theory, social capital theory, and weak tie theory.

Definition of Terms

The general research question posed by this study is “How do users of online social networks create and utilize weak ties to amass social capital?” An explication of this research question includes the following definitions:

The term *ties* refers to the connections we have with other people (Granovetter, 1973). The *strength of a tie* is a combination of the amount of time, emotional intensity, mutual confiding, and reciprocal services between two people. The degree of overlap of two individuals’ friendship networks varies directly with the strength of their tie to one another. *Strong ties*, which predominate, breed local cohesion, but at the cost of overall social network fragmentation. An example of a strong-tie relationship would be a church group that meets weekly. Conversely, *weak ties* act as bridges between close-knit cliques and are a good measure of social cohesion. An example of a weak-tie relationship would be a league of bowlers.

Social capital refers to the collective value of all “social networks (who people know) and the inclinations that arise from these networks to do things for each other (norms of reciprocity) (Putnam, 1995, p.65). Thus, social capital could refer to ideas, physical resources, companionship, or other things that improve one’s quality of life. Social capital should be conceived as being embedded in social networks, and can consist of anything another member of that network would benefit from attaining.

Sociotechnical capital refers to productive combinations of social relations and information and communication technology that would be infeasible without computers mediating interactions (Resnick, 2002). It is thus a special case, a subset of social capital, but an important one because technological advances have opened many new opportunities that have not been examined from the social capital perspective.

Something constitutes capital under either definition if it helps a group of people to accomplish more together by improving the routing of information, the exchange of resources, the provision of emotional support, or the ability to coordinate and mobilize for collective action.

For the purposes of this study, *civic participation* will refer to activities that enable citizens to articulate and organize requests for good government, to integrate into community life, or to increase psychological inclusion. Many, but not all, assessments of social capital are exercises in civic participation under this definition. At a minimum, the term civic participation must encompass such acts as sharing perspectives electronically, contacting social elites via the Internet, and organizing community action online, as these all may contribute directly to social capital assessment.

Putnam provided many pragmatic examples and operationalizations of civic participation in his book, "Bowling alone: America's declining social capital." (1995). In this study, these examples are referred to and measured as an index titled "civic participation." In 2001, Putnam identified additional examples of activities that would qualify as civic participation. In this study, these examples are referred to and measured as an index titled "weak tie participation."

Shah's (2005) definition of *communication*, "the sharing of perspectives and concerns with others," will be employed. This definition of communication was deemed appropriate because Shah's model showed that civic participation was significantly influenced by communication, which was significantly influenced by information seeking. *Citizen Communication* will be used to refer to all activities listed under the indices "interactive civic messaging," "interpersonal discussion," and "social network messaging."

The purpose of this study is to ascertain what effect the utilization of weak ties in one's social network has on civic participation.

Literature Review

It has long been held that civic participation is necessary for the success of a democratic polity, but participation in civic life, especially beyond voting, is in limited supply in the United States. In his book “Bowling Alone”, Robert Putnam (1995) tied a decline in bowling league membership over a fifty-year period to a more general trend of disengagement from civic life. This decline was responsible for the lessened ability of citizens to articulate and organize requests for good government, a movement away from community life, and increased psychological alienation.

Putnam found that since World War II Americans have signed fewer petitions, belonged to fewer organizations and associations, knew their neighbors less and spent time with their friends and family less frequently. He referred to the waning virtues as “social capital,” which he defined as the norms, trust and collective resources that are essential for community life. He argued, with some success, that the advent of television was responsible for the decline in social capital.

The advent of the Internet offers the potential to redefine this situation. The Internet brings a remote political life into citizens’ homes, making it easier for them to obtain and share information via the web, email, instant messaging or online social networking. It may not have been since the invention of the printing press that the ability to communicate across space and time has been so profoundly enhanced.

The affordance of a media system such as the Internet, which allows for both information search and citizen communication, is of much interest to social capital theorists. Shah (2005) found support for a model in which information seeking, online or offline, leads to citizen communication, which results in civic participation. He suggested that those who

prefer informational media to entertainment media are significantly more likely to discuss what they have learned with others. Shah predicted that the Internet will lead to increased engagement in social capital-building activities.

Some scholars claimed that the Internet would prove socially isolating (Kraut, 1998; Nie, 2001), while others claimed it would lead to a restructuring of communities (Bimber, 1998; Bucy, 2001). Wellman (2001) found both groups to be correct, in part. His studies found that communities are becoming less group-oriented, and increasingly embedded in our social networks. More recently, researchers have suggested that social capital is similarly embedded, and that the Internet may be enabling people to amass and utilize it in yet-undiscovered ways (Kavanaugh, 2005; Weber, 2003). Computer-mediated interactions are creating new forms of social relations and capital exchange, thereby creating a new subset of social capital: sociotechnical capital (Resnick, 2002).

In this debate over the role the Internet will play in social capital amassment, Granovetter's (1973) *Strength of Weak Ties* theory has modern applicability. Granovetter envisioned human society as a quilt built of patches and interconnected threads. Strong-tie cliques dominate the social landscape, but information traverses greater distances more quickly when passed through weak ties in our social network. Nan Lin (1999) modernized Granovetter's weak tie theory by integrating social capital theory into social network theory.

This literature review illustrates the value of online social networks in amassing social and sociotechnical capital. It also demonstrates the importance of weak tie utilization in this process. An overview of significant research findings of two mass communications scholars delineates between mass media and two-way communications systems such as the Internet. Subsequently, this paper will look at the characteristics of two-way mass media systems, and

the value of discursive communication to American democracy. This literature review will also review case studies of social networks, both offline and online.

The literature under review provides a theoretical backdrop and highlights the importance of the research question: “How do users of online social networks create and utilize weak ties to amass social capital?”

The Internet: A New Mass Media

Steven Chaffee (1972), in “The interpersonal context of mass communication,” suggested that media systems and interpersonal sources are complimentary, and the correct function of mass media may be to facilitate interpersonal discussion. He said that it is quite conceivable that technological innovations will begin to expand the range and effectiveness of interpersonal communication.

Chaffee warned, however, that expanded information and decentralized communication may actually have a narcotizing effect, pushing the public away from civic life. Indeed, as Americans have become more educated and more media savvy, there has been a corresponding decrease in participation. Bucy (2001) attributed this to the fact that the media landscape has become dominated by various forms of one-way communication that maximize campaign influence but limit audience interactivity, effectively silencing citizens in the process.

Conversely, the two-way architecture of the Internet provides a public space for citizens to debate politics and express their opinions regarding policies or politicians, thereby building a more conscious democracy. Bimber (1998) claimed that such changes in the information environment are accelerating the process of issue group formation and action. The interactivity of the Internet enables citizens who are otherwise relatively indifferent to

public life to become more powerful when their attention is called to the actions of government officials. This suggests that information exchange may increase the responsiveness of government to the public, even without a drastic change in citizen engagement or participation.

Bimber predicted a shift toward a system of more rapidly changing issue groups with less stability and less dependence on private and public institutional structures. This alternative model is referred to as accelerated pluralism. Delli Carpini (2000) voiced his agreement, stating that “because of its ability to shift the nature of community from geographic to interest-based, the Internet’s inherent traits will challenge traditional definitions of information gatekeepers and authoritative voices, as well as of producers and consumers of information.

However, Delli Carpini was less sanguine about the long-term prospects of the Internet for increasing social capital, noting that it would have to resist being overwhelmed by fragmentation, manipulation, consumerism, dominance of entertainment over public affairs, the paralyzing impact of information overload, and the devaluing of certain kinds of participation.

But constraints and control are waning rapidly as inexpensive computers and Internet access become available, and technology leapfrogs the traditional authoritarian control of access to information and resources. As a result, information is freer and more available to people today than ever before in human history (Lin, 1999). Bimber suggested that the Internet might also contribute to the decentralization of control over privately owned media, perhaps militating against the trend toward media concentration. At the very least, the Internet will decrease the influence of established media organizations over formation of the political agenda and open more governmental and political information to contemporaneous public scrutiny.

Patterns of Internet Use

One difficulty researchers have when studying the Internet is that they can only analyze a static snapshot of a rapidly evolving new medium. The multi-faceted nature of the Internet makes it increasingly difficult to make broad generalizations about the technology that hold over time.

In 2000, Nie and Erbring found that increased Internet use correlated with more time spent working, loss of contact with one's social environment, and discontent with traditional media - over half of regular Internet users reported reduced television and newspaper use.

A year later, Dhavan Shah (2001a) found that informational uses of mass media of any kind, be it print, broadcast or the Internet, have significant pro-civic consequences. Whereas the older generation prefers newspapers and the younger generation prefers the Internet, this is not cause for alarm. Overall Internet use was found to be positively, though weakly, related to civic engagement.

That same year, Nie (2001) found that since time is finite, increased Internet use must lead to a reduction in time spent socializing - as he put it, "it is simply a matter of time." This dichotomy between using the Internet and "socializing" is false, as email and instant messaging were not accounted for as forms of socialization. Nonetheless, in calling attention to intended use of the medium, Nie was both acknowledging the Internet's variety of uses and pointing out their qualitative dissimilarity.

Shah's disaggregation of online practices into types of use showed that how people use the Internet is more important than how much they use it. Those who use the Internet for communication and information exchange encounter more information and opportuni-

ties for civic recruitment than those who use the Internet for entertainment (Shah, 2001b). Patterns of Internet use featuring the exchange of information, not simple Internet use, are what are important.

Communication on the Internet

The exchange of information on the Internet makes the medium qualitatively different than its mass-media predecessors. Carey (1989) differentiated between ritual and transmission views of communication. The transmission view of communication, which is most common in developed nations with complex media structures, is the one-way sending or imparting of information. A one-way transmission of information is not ideal for a democratic society. Conversely, the ritual view of communication denotes a sharing of information and fostering of community, and this is where interactive media comes into play.

The Internet is an information source that supplies users with up-to-the-minute answers to their questions, but it is also a communicative tool allowing users to engage with one another, exchange information, and mobilize on issue bases. In this respect, the Internet is more comparable to the telephone than the television (Kraut, 1998). Carey's definition of ritual communication, in this context, seems much more applicable to the Internet. Conceptualizing of the Internet in this way offers valuable perspective on the difference between the Internet and forms of mass media that preceded it.

In 2005, Shah revised his theory by adding communication as a third type of media use. In doing so, Shah confirmed the role of the Internet in the contemporary American political landscape as both a source of information and entertainment, and a sphere of expression.

Shah defined communication as “the sharing of perspectives and concerns with others” (Shah et al. 2005). Detailing how communication leads to the production of social capital, Shah et al. theorized a causal structure leading from information-seeking behavior to citizen communication, which leads to civic participation:

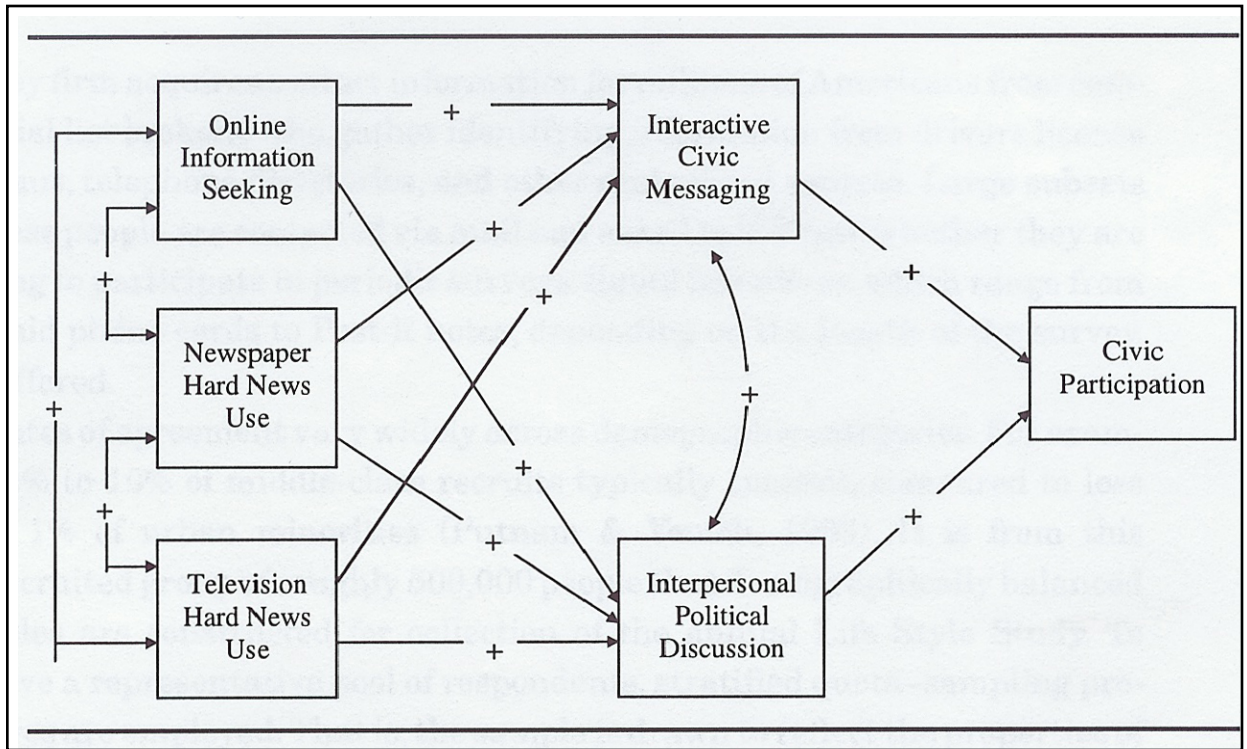


Figure 1. Shah’s Information>Communication>Participation model

The resulting model supported the claim that both interpersonal political discussions and interactive civic messaging yield significant and equivalent positive associations with civic participation. Citizen communication, both online and offline, plays a critical role in the relationship between information seeking via the mass media and participation in civic life (Shah, 2005).

Indeed, the expressive potential of the average citizen has been transformed; individuals are now in a position to post messages and images to a global audience at minimal cost (the equivalent of having one’s own printing press). Shah found that the Internet en-

ables the production of social capital by supplementing information networks and facilitating organizational involvement (Shah, 2005).

Because the Internet supplies more information and opportunities for civic engagement than any media system ever has before, greater psychological rewards and personal empowerment can be derived from its use. Even if it is only symbolically empowering for the citizen, the Internet contributes substantially to legitimizing the political systems of mass democracies. A pre-Internet example of this is talk radio, which is best understood as an activity in which the audience are active listeners instead of passive recipients. The active involvement of fellow citizens reminds viewers of their own democratic role and civic identity and may encourage spectators to become more engaged in civic life (Bucy, 2001).

Active participation plays a key role in determining whether an individual will experience personal and social benefits from group membership. To the extent that membership in the group matters to the individual, virtual groups can and do exert powerful social influences on the participants (McKenna and Green, 2002).

Although most civic participation tends to be concentrated in the hands of a few citizens, levels of participation on the Internet have been shown to be less concentrated: Weber (2003) found that a fifth of the sample population performed the relatively new act of engaging in political discussion over the Internet. Internet participation was determined to significantly effect political participation, even when controlling for race, education, age, gender and civic participation. Such participation may serve as a mobilizer, cultivating skills such as writing and communication, which transfer directly to political and civic activities. This is the functional equivalent of creating social capital.

If online social messaging is encouraging new modes of expression, deliberation, and recruitment among young people, the civic consequences are significant. These details seem

to confirm Chaffee's premonition that technological innovations will expand the range and effectiveness of interpersonal communication.

The Strength of Weak Ties

While Shah's model depicts the role of interpersonal communication in the creation, exchange and amassment of social capital, a study titled *The Strength of Weak Ties* offers a conceptual framework for how social networks might act as an intermediary between information sources, such as media establishments, and civic participation.

In that study, Granovetter (1973) coined terminology and theoretical constructs to describe how information is traded in communities. "Ties" were defined as the connections we have with other people. The strength of a tie is a combination of the amount of time, emotional intensity, mutual confiding, and reciprocal services between two people. The degree of overlap of two individuals' friendship networks varies directly with the strength of their tie to one another. Strong ties, which predominate, breed local cohesion - but at the cost of overall social network fragmentation.

Conversely, weak ties act as bridges between close-knit cliques and are a good measure of social cohesion. The term "bridge" is used here to identify a line in a network that provides the only path between two points. By that definition, all bridges are necessarily weak ties. From the individual's point of view, weak ties are an important resource in enabling social mobility, because more opportunities can be reached through weak ties. Information can be disseminated to a larger number of people and traverse greater social distance when passed through weak ties than strong ties.

In other words, people with many weak ties are best placed in a social network to diffuse information and innovation because some of these bridges will lead to cliques that

are not privy to that information. Conveniently enough, the reverse is also true: those with weak ties are also privy to more information, because they serve as the destination for other bridges. This is graphically illustrated as such:

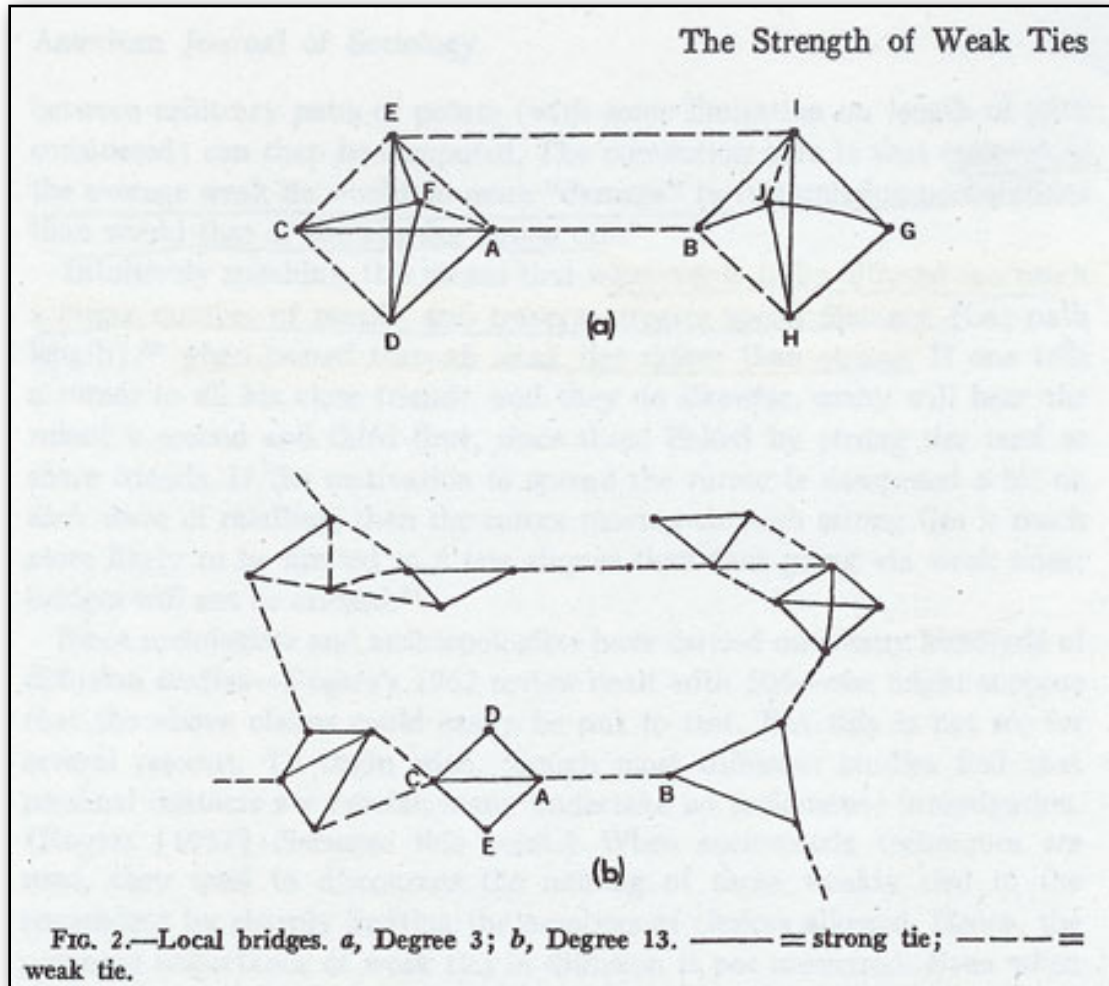


Figure 2. Granovetter's Strength of Weak Ties model

Perhaps not coincidentally, this pattern bears marked similarity to the two-step flow model proposed by Katz and Lazarsfeld (1955):

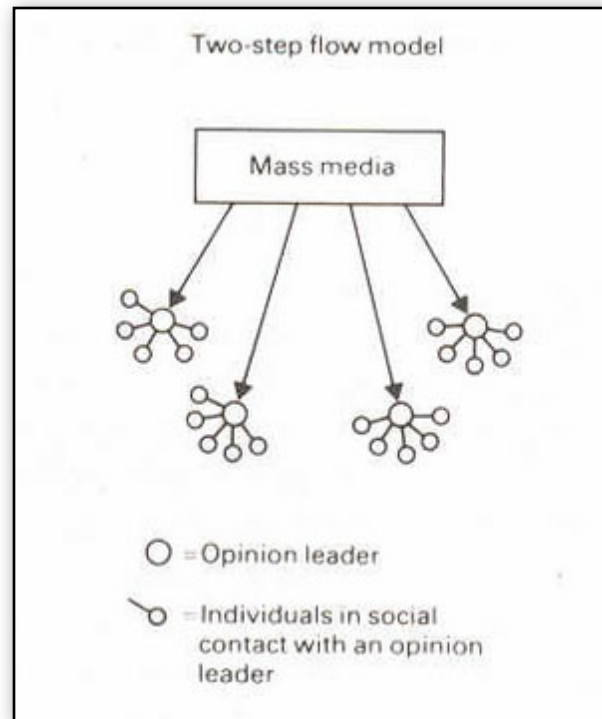


Figure 3. Katz et al.'s Two-Step Flow model

The two-step flow of communication theory states that the media distributes information to opinion leaders, or people with the most access to media and a more literate understanding of media content. Opinion leaders then interpret and disseminate information to the mass public.

Granovetter's weak ties serve a strikingly similar purpose to Katz et al.'s opinion leaders. In both theories, intermediary human agency is essential for sharing information from a source to an audience.

Roch (2005) sought to identify who opinion leaders are and what constitutes their status. She found that spanning structural holes has a greater effect on the likelihood of being considered an opinion leader than attributes such as use of media or involvement in civic life.

Spanning structural holes, as Roch employed it, refers to occupying a unique position in one's social environment and possessing contacts that other group members lack. It is thus synonymous with Granovetter's concept of bridging weak ties. Individuals who engage in this activity are more likely to have access to potentially valuable information than other group members who do not. The data indicated that bridging weak ties clearly increases the probability of a discussant being identified as an opinion leader.

Roch noted that social context plays a key role in determining opinion leadership. Individuals who are opinion leaders in one context may not act as opinion leaders in another context in which other individuals hold similar information and maintain similar contacts. Opinion leaders, then, are those who have access to better information based on their needs and their current position in the social milieu.

Quality information should thus be considered a form of social capital, which is logical given that citizens often seek out information, thereby signifying its value to them. If the ability to extend and manipulate one's social network makes people more capable of accessing and transmitting information, it would presumably result in an increase in the number and effectiveness of opinion leaders. Simultaneously, social networks are allowing opinion leaders to further develop and maintain their weak ties, thereby sharing their information with a larger audience. This combination may equate to an increase in the net production of social capital.

Resnick (2002) refers to such productive combinations of social relations and information and communication technology *sociotechnical capital*. This is a subset of social capital, and one of particular interest to social scientists because technological advances have opened many new opportunities that have not been examined from the social capital perspective.

This new form of social capital may be increasing the amount of social capital being exchanged in society.

Like social capital and financial capital, sociotechnical capital should be conceived as a resource that can be accumulated over time through deliberate investment. It may consist of artifacts created during the earlier interactions or the social ties and practices that developed as a result of such interactions. By this definition, something constitutes capital if it helps a group of people to accomplish more together by improving the routing of information, exchange of resources, provision of emotional support, or ability to coordinate and to mobilize for collective action.

Resnick (2002) offers a number of operationalizations of his concept that are applicable to social networks, four of which will be incorporated in this study. First, computer-mediated communication removes barriers to interaction, enabling users to communicate at a distance and across time. Second, introducer systems such as online social networks can serve as introducer systems, introducing friends and colleagues to each other. Directories can break the ice among people who are members of new or loosely-knit groups, especially when they include photos and something fun or personal that acts as a conversation starter when people meet. Third, new forms of sociotechnical relations may be especially useful for groups of people so large that it's impossible for everyone to know everyone else. In larger groups, there are more opportunities for information and resource sharing, but it's difficult to coordinate these, and it is difficult to overcome problems of collective action. Sociotechnical capital may enable productive activity in these larger groups. Fourth, dormant but activatable social ties may serve as static contact points for users whose contact information is prone to frequent change. Though this list is not exhaustive, these four types of sociotechnical capital are examples of new forms of social relations that would be infeasible without

computers mediating interactions. Resnick concludes by noting that the challenge for researchers is to identify and promote those new social relations that truly are productive.

USENET, BEV, and Club Nexus: Three Case Studies

In 1980, the University of North Carolina - Chapel Hill and Duke University created a precursor to the Internet forums of today. USENET was created over a decade before the World Wide Web. Effectively a functional equivalent of a bulletin board, USENET was one of the first forms of online social communication. In 1997, Hill and Hughes (1997) studied USENET to determine whether electronic communities demonstrated the behavioral characteristics one would expect of a socially cohesive group. They found that people were merely moving their age-old patterns of interaction into a new realm. However, a message posted to a typical Internet newsgroup was accessible to over 30,000 people, given authors a readership better than many newspapers. These results confirmed that USENET was indeed a form of political community, existing for the purpose of communication. The researchers predicted that even if USENET were replaced by another system of communication, the results should remain applicable.

In 1993, Virginia Tech embarked on a mission to develop an online community linking the entire town of Blacksburg, VA. Though it was not initially conceived as a social capital-building technology, one specific purpose of the Blacksburg Electronic Village was to encourage community organizations to take advantage of network resources to facilitate their agendas. Still functioning today, one of the primary goals of the BEV today is to evaluate and document the use and impact of community networking.

In their 2001 study of the BEV, Kavanaugh and Patterson found that Blacksburg residents were increasingly using the Internet for social capital-building activities, whether

they were building that capital for online or offline activities. The longer people had been connected to the Internet, the more likely they were to use the network for such activities. Kavanaugh hypothesized that the presence of the Internet, and in this case the BEV, contributes to social capital formation in yet-undiscovered ways.

Putnam (2000) argued that initiatives such as the BEV are an outcome of communities with initially high levels of social capital, community involvement and community attachment. Social capital may turn out to be a prerequisite for, rather than a consequence of, effective computer-mediated communication (p.177). If that were to be the case, community computer networks would be nothing but voluntary organizations for the information society.

When researchers returned to the BEV four years later, the city's Internet connectivity rating had risen to 87.7%, which is among the world's highest Internet densities. Kavanaugh et al. (2005) found that Internet use was shown to strengthen social contacts, community engagement and attachment. However, as Putnam argued, these findings were explained by levels of education, extroversion and community. Social groups were the only group to show significant increases over time in active types of participation.

However, Kavanaugh made another, more intriguing finding. The Blacksburg Electronic Village experiment demonstrated that most online group interaction was simply an extension of pre-existing offline networks, occurring within formal or informal groups (Kavanaugh et al., 2005). Because members of groups interacting online already knew each other in real-world communities, their roles in a networked community typically reflected their roles offline. The researchers concluded that existing social networks take advantage of the information distribution aspects of the Internet to help users become more effective and connected communicators.

This finding echoes that of Birnie and Horvath (2002), who argued that online social communication should be considered as an extension of interactions in traditional social networks. The Internet simply supplements traditional social behavior, without increasing or decreasing it (Haythornthwaite and Wellman, 1998).

Conceptualizing of the Internet as a supplementary community interaction forum, Wellman et al. (2001) found that communities are becoming less group-oriented and increasingly embedded in social networks. The Internet is aiding this transition by allowing users to overcome spatial and temporal limitations. In fact, the majority of Internet users reported having strengthened ties with family members and friends who do not live in close proximity as a result of the Internet (Moore, 2000). The technology is also said to increase organizational involvement by facilitating the flow of information between physical meetings and enabling the arrangements of such meetings. Wellman's data showed that heavy Internet use was mildly associated with increased participation in voluntary organizations and politics.

Blanchard and Horan (1998) claimed that social capital and civic engagement will increase when virtual communities develop around physically based communities and foster additional communities of interest. Through a preliminary analysis, they identified education, exchange of general community information, and opportunities for government and political participation to be potential communities of interest. They predicted that the creation of such physically-based online social networks would increase levels of social capital and civic engagement.

The subsequent creation of social networking Web sites such as Stanford's Club Nexus seemed to provide an opportunity to test Blanchard and Horan's prediction. "Club Nexus" was created to serve physically-based educational communities, and allowed individuals to construct their own ties on an online social networking site. The richness of their

profiles allowed for detailed network analysis, but Adamic (2005) found that the majority of users listed less than 20 friends, and that this lack of individual network size rendered educated network search impossible. For example, two students living in the same dorm had only about a 5% probability of being Nexus buddies. This probability is so small as to be insufficient to direct the search toward the target.

The majority of users in Adamic's sample listed less than 20 friends, but it is not uncommon for a Facebook.com user to list over a hundred friends. Blanchard and Horan's prediction that physically-based educational communities will increase levels of social capital and civic engagement has not been tested on this network. If Facebook.com users have more links to friends due to exploring their social network to find people that bridge to more desirable cliques, this would be a very significant finding. The growth in popularity and use of social networking sites warrants a replication of Adamic's study on the Facebook.com social network.

The Ties that Bind: Social Network Theory and Social Capital Theory

What Putnam saw as valuable in bowling leagues was not the bowling. Rather, the confluence of people with different backgrounds allowed for the creation of social capital. But why did he choose bowling leagues in the first place? With respect to civic engagement, wouldn't Parent-Teacher Associations or city councils be more reliable generators of social capital?

According to Granovetter, they would not. PTAs and City councils are comprised of people with similar interests, a set agenda, and overlapping social networks. Bowling leagues, however, welcome individuals of any economic, professional, or ideological background. Thus, relative to those who serve on the PTA, bowlers can be presumed to have

weaker ties to one another, as well as access to a wider breadth of information. Such associations would presumably generate more social capital, and this is indeed what Putnam found.

Putnam addressed this issue in a 2001 article titled *Social capital: Measurements and Consequences*:

“I do not believe, nor have I ever believed, that associations were some privileged form of social capital, except in the sense that associations tend to gather data on themselves and, therefore, it is easier to gather data on associations. Beyond this greater ease of measurement, there is nothing canonically superior about formal associations as forms of social networks. It could be true that associations were becoming less common in America but that we were hanging out in bars more, that we were having more picnics, that we were seeing folks at our home at night more often, and those forms of informal social capital can be quite important.”

Lin (1999) sought to tie together Granovetter’s social network theory into Putnam’s social capital theory, stating that social capital is amassed from embedded resources in social networks, and the interactions of members of a social system make the maintenance and reproduction of this social asset possible. Lin cites three reasons why social networks will enhance the outcomes of actions. First, they facilitate the flow of information. Second, these social ties may exert influence on those who play a critical role in decisions involving the actor. Third, social resources may be perceived by organizations as certifications of the individual’s social credentials.

Lin found that access to and use of social resources are in part determined by the utilization of weak ties and by positions in the hierarchical structure - what Roch referred to as structural holes. Network locations facilitate, but do not necessarily determine, access to better information and opportunities. This is because not all bridges lead to better information, enhance social credentials or offer reinforcement. Lin concluded that civil society, instead of dying, might just be evolving to become more networked and expansive.

The vitality of pluralistic civil societies such as the U.S. is to some extent dependent upon citizens having with a good number of weak ties in their social networks to sustain support for democratic freedoms in the midst of greater heterogeneity. Gibson (1999) found that support for democratic institutions correlates highly with the number of weak ties in a person's social network. Moreover, the composition of people's social networks has meaningful consequences for interpersonal tolerance. Exposure to oppositional viewpoints increases the awareness of legitimate rationales for opposing views, because crosscutting contact improves people's ability to see issues from the perspective of others - even when they personally do not agree. The capacity to see that a conflict is, in fact, a legitimate controversy with rationales on both sides translates to a greater willingness to extend civil liberties even to those groups whose views one dislikes a great deal.

For a community to develop many weak ties that bridge, there must be several distinct ways or contexts in which people may form them. Arguably, this is what social scientists speak of when they reference town halls, public spaces and bowling alleys. When Putnam (1995) called attention to membership decline, he was signaling the widespread loss of venues that allow for such bridging capital to be formed. Though he has expressed pessimism about the potential of the Internet to improve this situation, social networks have many features that imply they could facilitate bridging, including increased population density, asynchronous communication, and network search.

Do social networks serve as a new kind of association? If so, Putnam's theory might be significantly affected by the mass adoption of online social networking technologies. The simple affordance of such space does not, however, necessitate that any social capital will be formed or traded there. Granovetter's theory suggests that high-density, localized communities might be the best for developing "weak ties," people who might double as Katz et al.'s

opinion leaders. What sorts of ties are being created on these networks, and what for what purpose are they utilized?

This question remains unanswered due to a lack of research on online social networks. Social scientists decry a loss of public spaces and a decline in social capital, but new forms of communities and social capital are not being factored into the equation. A better understanding of weak tie utilization by an increasingly networked generation could assist researchers and journalists in understanding how information spans networks. This study will attempt to determine how users of online social networks create and utilize weak ties to amass social capital.

Method

This study explores the influence of online social networks on members' levels of social capital creation. Specifically, this study seeks to determine how users create and utilize weak ties to amass social capital in online social networks such as Facebook.com. This mixed-methodology study consists of an initial electronic survey of 158 respondents and a subsequent opt-in qualitative survey of 20 respondents. In the first phase, quantitative research questions address the relationship between weak tie seeking activities, social network messaging and Dhavan Shah's "information>communication>participation" model. Following this macro-level analysis, qualitative open-ended questions are posed to gather specific examples of how social network users are engaging in weak tie utilization and social capital-amassing activities on social networks.

This mixed-methodology study is an "illuminative evaluation." Such evaluations "make key behaviors or attitudes in a given context visible for contemplation. The aim is to enlighten policy makers or practitioners to the dynamics of behaviors in comparable situations in order that those behaviors can be understood and attended to in a more appropriate way. A range of evidence, often qualitative, is employed" (Hart, 2003).

The design of this study is straightforward. The two steps fall into clear, separate stages due to the study's sequential explanatory strategy. Sequential explanatory strategies are characterized by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data. The purpose of the sequential explanatory design is to use qualitative results to assist in explaining and interpreting the quantitative data, which receive priority. This approach is appropriate for this study, which hypothesizes that social networks are affecting social capital amassment in yet-undiscovered ways.

The main weakness of this design is the length of time involved in data collection, due to the fact that it has two separate phases (Creswell, 2003, p. 215). However, it is possible to combine quantitative and qualitative data in a study that extends over time by selecting for more intensive study a smaller sample of people who participate in focus groups or open-ended questions (Wimmer and Dominick, 2000, p.213).

Theoretical Basis

Dhavan Shah’s “Information and expression in a digital age: Modeling Internet effects on civic participation” provided a framework for the methodology of this study. Shah et al. (2005) theorized a causal structure leading from information seeking to citizen communication, which in turn leads to civic participation:

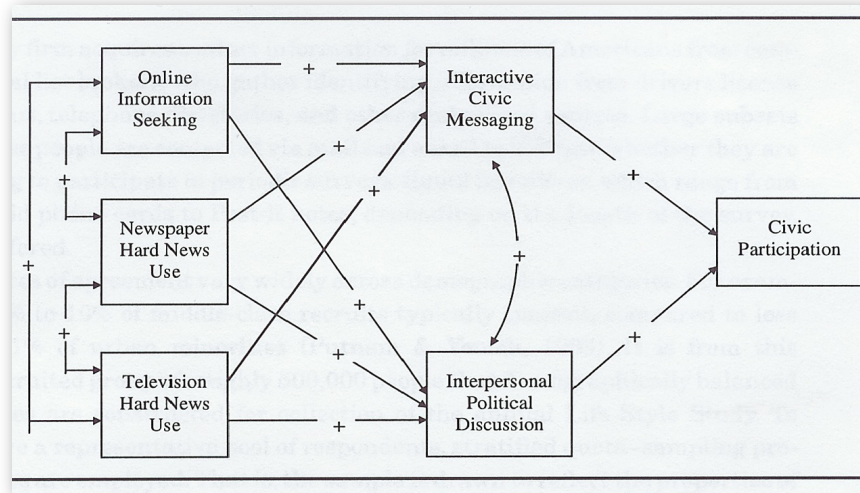


Figure 1. Shah’s Information>Communication>Participation model

Each block in the diagram above represents an index of questions taken from the DDB Life Style Study survey, a national panel survey. Shah et al. collected this data from that survey in three waves (February 1999, June 2000, and November 2000) using a stratified quota-sampling method to recruit respondents.

The resulting model supported the claim that both interpersonal discussions and interactive civic messaging yield significant and equivalent positive associations with civic participation. Shah et al. concluded that “citizen communication, both online and offline, plays a critical intermediary role in the relationship between information seeking via the mass media and participation in civic life” (Shah et al., 2005).

Phase one of this study utilized Shah’s framework, but modified it to evaluate the role that weak ties play in social capital amassment. The “Newspaper Hard News Use” and “Television Hard News Use” indices were omitted, as these activities are, by definition, not possible in an online social network. News from these sources received on an online social network would qualify as “online information seeking,” and this index was retained.

Three indices were added to this model. “Weak tie seeking” was added as a form of information seeking. “Social network messaging” was added as a form of citizen communication. “Weak tie participation” was added as a new form of civic engagement. The addition of these indices to Shah’s model made it possible to measure the influence weak ties have on more traditional forms of social capital amassment behavior. A revised model that incorporates all of these indices is included below:

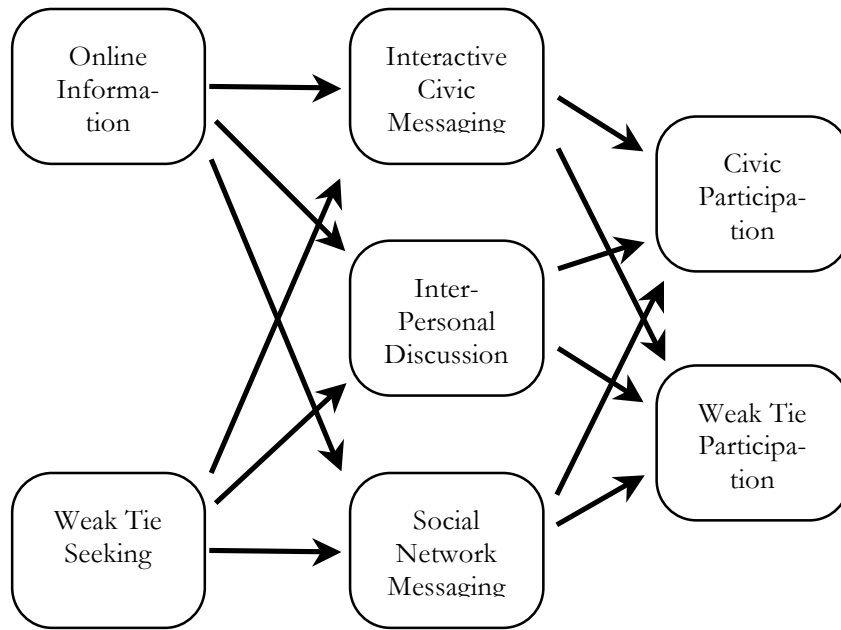


Figure 4. The revised model to be used in this study

Each block in the diagram above represents an index of questions. All but one of the indices taken from Shah’s study (“Online information seeking,” “Interpersonal discussion,” and “Civic participation”) are not altered, meaning that they are comprised of questions from the DDB Life Style survey. “Interactive civic messaging” has been altered: instances of these activities occurring over IM are now included along with email to differentiate between activities on online social networks and in other forms of online citizen communication. New indices (“weak tie seeking,” “social network messaging,” and “weak tie participation”) have been added to this model and are described below. (The complete survey can be viewed in Appendix A.)

Weak tie seeking is a form of information seeking hypothesized to be functionally equivalent to Shah’s *online information seeking* with regard to citizen communication. *Online information seeking* consists of five questions measuring how often respondents visited a news site, received news or sports information from the Internet, or visited the Web site of a government agency, politician, or social group or cause. *Weak tie seeking* consists of 5 questions

measuring how often respondents used social networks to communicate with distant friends, to get to know acquaintances better, to put faces with names, to meet new friends, and to join groups of people who share the respondent's interests. These items all adhere to Granovetter's (1973) definition of weak ties. This index was added to measure the extent to which information received from weak ties in one's network leads to citizen communication - interactive civic messaging, interpersonal discussion, or social network messaging. The following hypothesis is posed:

Hypothesis 1: Weak tie seeking is significantly and positively associated with interactive civic messaging, interpersonal discussion, and social network messaging.

Social network messaging is a form of citizen communication hypothesized to be functionally equivalent to Shah's *interactive civic messaging* and *interpersonal discussion* with regard to civic participation and weak tie seeking. *Interactive civic messaging* consists of seven items measuring how often respondents discussed politics with someone via email, contacted a politician because of an email they received, sent an email to the editor of a newspaper or magazine, sent an email to a politician, tried to recruit someone to volunteer with email, used email to organize a social activity, or used email to organize community service. As noted above, these questions from the DDB Lifestyle survey have been altered: the words "or IM" have been added to each question. *Interpersonal political discussion* consists of five questions measuring how often respondents talked about politics with coworkers, neighbors, friends, family, and acquaintances. This index was not supplemented. *Social network messaging* consists of seven questions measuring how often respondents used social networks to discuss current events with someone, to try to get someone to volunteer, to organize a party, to organize a

group meeting or event, to forward someone a link, and to obtain lecture notes. This index is derived from the questions of *Interactive civic messaging*. However, questions 27 (contacting a public official because of an email of IM you received), 28 (emailed the editor of a newspaper or magazine), and 29 (emailed a politician) have been removed, as they could not be performed on online social networks at the time of research. Questions 37 (used social networks to forward someone a link), 38 (used social networks to obtain lecture notes), and 39 (used social networks to “poke” someone) were added. Only question 37 was included in the index for final analysis, however, because it has a natural corollary in *Interactive civic messaging*: question 27. This index was added to measure the extent to which citizen communication on online social networks leads to civic participation and weak tie participation. The following hypothesis is posed:

Hypothesis 2: Social network messaging is significantly and positively associated with civic participation and weak tie participation.

Weak tie participation is a form of social participation hypothesized to be functionally equivalent to Shah’s *civic participation*. *Civic participation* consists of five questions measuring how often respondents did volunteer work, went to a club meeting, worked on a community project, went to a community or neighborhood meeting, and worked on behalf of a social group or cause. These are all types of formal associations which, while important in the production of social capital, are not the only settings in which social capital production can occur (Putnam, 2001). Thus, additional forms of civic participation are measured in the *weak tie participation* index. *Weak tie participation* consists of five questions measuring how often respondents went to a party or social gathering, went to a bar or tavern, went to a concert, went to a church social event, and went to a sporting event. This index was added to meas-

ure the extent to which citizen communication on online social networks leads to civic participation, both in formal and informal social groupings. The following hypothesis is posed:

Hypothesis 3: Civic participation and weak tie participation are significantly and positively associated with all forms of citizen communication.

These indices were then measured against one another using a cross-sectional regression analysis to determine the strength of relationships existing between them.

Phase One: Quantitative Surveys

The instrument utilized in phase one of the survey, hosted at FreeOnlineSurveys.com, consisted of fifty questions and should not have taken longer than fifteen minutes to complete. These types of surveys are popular because they can secure a lot of information without the expenditure of a lot of time and money. They are especially useful for collecting information on audiences and readership (Wimmer and Dominick, 2000, p.168).

The following instructions for conducting a mail survey, outlined by Wimmer and Dominick (2000, p. 183) were followed:

1. Select a sample. This includes defining the population, developing a sampling design, and determining the sample size.

Participants were recruited via a message and URL sent out to all individuals listed as friends of the researcher on Facebook.com, who were then asked to forward the recruitment message on to two of their friends. This is an example of a snowball survey. This type of sampling method has the potential to gather a biased sample, as respondents may consist of only respondents from a club, organization, or group (Wimmer and Dominick, 2000, p. 96). Because this survey intended to target a specified subgroup of the population (users of social

networks), this non-probability sampling method was deemed appropriate. As Wimmer and Dominick note, non-probability samples are acceptable “when studies are not intended to be generalized to the general population, but rather to investigate variable relationships” (p. 86).

2. Construct and pretest the instrument.

The construction of the survey was based on a previous study by Shah et al. (2005), with modifications detailed below. The online survey was pre-tested on two individuals, who both completed the survey in less than five minutes with no complications encountered.

3. Write a recruiting message. As noted above, a brief note explaining the purpose and importance of the questionnaire was sent to the sample, and is included in Appendix A.

4. Send the surveys. Invitations were sent out on October 7, 2006.

5. Tabulate and analyze data. Data were compiled on October 21, 2006. The data were coded to include variable names that a computer will recognize. SPSS v.13, the statistical package for the social sciences, was used to analyze the statistics gathered, and describe and make inferences about observed patterns in the data.

The survey did not gather any information that could be used to identify individuals. However, question 50 asked respondents who “would be willing to participate in an additional qualitative interview on this topic” to provide an email address. Respondents were able to complete the survey without submitting an answer for this question. After a sample was determined for the qualitative interviews, all identifying information was stripped from the data. All data collected were kept confidential and saved on a password-protected external hard drive at all times. These data were qualitative in nature, and cited to give insight into the results of the quantitative survey.

There are a number of advantages to survey research. The cost of surveys is reasonable when considering the amount of information gathered. Also, data helpful to survey research that already exist can be used as secondary sources of information. Shah's findings will be used as secondary data for purposes of comparison. Surveys are also the best way for getting multiple items for a given concept, thereby increasing reliability. This study, like Shah's created several indices to measure variables. Another advantage of surveys is that they allow for selective sampling of a highly specialized audience. Lastly, surveys allow researchers to examine many variables, to look at more than one IV at once, to measure the same variables in many ways, and to use a variety of statistics to analyze the data.

Surveys have some disadvantages as well. Inappropriate wording or placement of questions within a questionnaire can bias results. Similarly, results can be biased because they rely on self-report measures, and not direct tests of relationships. Also, surveys are the slowest form of data collection, leading many researchers to set a cutoff date after which returns are not included in the analysis. Finally, results are often received only from people who are interested in the survey, and this injects non-response bias into the results.

Phase Two: Qualitative Personal Interviews

Respondents who consented to participate in an additional interview and had high scores for the weak tie variables were sent open-ended, semi-structured questions. The responses to these questions were collected by email.

The following instructions for conducting personal interviews, outlined by Wimmer and Dominick (2000, p. 189), were followed:

1. Select a sample. Respondents are selected based on a pre-determined set of screening requirements.

For this study, only individuals who gave consent in the quantitative survey were invited to fill out the provide data for phase two. Only the data provided by respondents who had mean scores of greater than 3.5 for questions regarding both weak tie seeking (questions 16-20) and social network messaging (questions 33-39) were sent a questionnaire of open-ended survey items. In a sequential model, an analysis of quantitative data in the first phase can yield outlier cases. Following up by posing open-ended questions to these outlier cases can provide insight about why they diverged from the quantitative sample (Creswell, 2003, p. 221). This is definitive of a purposive sample, which includes subjects or elements selected for specific characteristics or qualities, and is chosen with the knowledge that it is not representative of the general population (Wimmer and Dominick, 2000, p. 88).

2. Construct the survey. The instrument to be utilized in this study was an questionnaire of open-ended questions consisting of 13 questions, and is further detailed below. The survey was sent out by email on June 28, 2007.

3. Collect the data. In this study, data in the form of respondents' answers were gathered and analyzed for pertinent and illuminative comments. Responses that made implicit or explicit reference to trends in the data were selected for their explanatory power.

The primary advantage of surveys is that they are the most flexible means of obtaining information, because the face-to-face situation lends itself easily to questioning in greater depth and detail. The primary disadvantage of surveys is the time and cost associated with arranging, conducting and analyzing the results.

This phase of the study attempted to provide illuminative details about how individuals utilize social networks to extend their weak tie networks. It also sought to determine how the availability of such weak ties facilitates opinion leadership and leads to civic participation.

The purpose of these open-ended questions was to discover how users create and maintain weak ties to amass social capital in online social networks. In an attempt to learn more about the role online communication and networking plays in social capital production, participants were asked open-ended questions about their intentions in using online social networks. Specifically, questions were geared to follow up on the weak-tie variables measured in the quantitative study, to measure civic attitudes, and to evaluate the utilization of social networks by survey respondents

The first section of the qualitative questionnaire featured questions regarding the role of communication in civic participation. The questions were taken from the quantitative phase of this study to gather qualitative data that can be viewed in relation to the findings of Putnam (2000) and Shah (2005). The questions for the qualitative phase of the study sought further insight on the results from the quantitative survey. A list of the questions have been included in Appendix B, section 1.

The second section, civic attitudes, inquired about participants' attitudes toward news, politics and the Internet. They were then presented hypothetical situations and asked to provide personal examples and details from their own experiences. These questions were broken into four domains, including diversion, personal relationships, personal identity, and surveillance. Examples included trying to find a ride, obtain lecture notes, meet companions, engage in political discussion, kill time, or tell a friend about a news item you've read. Detailed questions that were used can be found in Appendix B, section two.

The third section evaluated the quantity and quality of network utilization by survey respondents. To conduct this part of the study, it was necessary for participants to have access to a computer so that they could log in to their account. Once online, they were in-

structed to gather data about the number of friends they have, their group affiliations, and their online communication. These instructions are included in Appendix B, section 3.

Results

Phase One: Quantitative Surveys

There were 158 respondents for the quantitative survey of phase one. Of them, 93 were female, 50 were male, and 15 opted not to report their gender. The mean age of survey respondents was 22.21, with a range from 18 to 29. 56 respondents had completed some college, and 82 were college graduates. 33 lived in a rural community, 75 lived in a suburban community, and 33 lived in an urban community. 132 of the 158 respondents had a Facebook.com account, and 79 of the 158 had a MySpace account.

This analysis included seven variables: *online information seeking* (OIS), *weak tie seeking* (WTS), *interactive civic messaging* (ICM), *interpersonal discussion* (IPD), *social network messaging* (SNM), *civic participation* (CIV), and *weak tie participation* (WTP). Each of these variables is an index. For all indices, responses were recorded on a 5-point scale (see Appendix A for question wording). Indices were created by averaging scores for all questions belonging to the index.

The measure of *online information seeking* consisted of questions 11-15. This index of five questions had a Cronbach's alpha of .713.

The measure of *weak tie seeking* consisted of questions 16-20. This index of five questions had a Cronbach's alpha of .770.

The measure of *interactive civic messaging* consisted of questions 26-32. This index of seven questions had a Cronbach's alpha of .603.

The measure of *interpersonal discussion* consisted of questions 21-25. This index of five questions had a Cronbach's alpha of .758.

The measure of *social network messaging* consisted of questions 33-39. This index of five questions had a Cronbach's alpha of .795.

The measure of *civic participation* consisted of questions 1-5. This index of five questions had a Cronbach's alpha of .402. This is significantly lower than the Cronbach's alpha of .78 for this index in Shah et al.'s 2005 study.

The measure of *weak tie participation* consisted of questions 6-10. This index of five questions had a Cronbach's alpha of .601.

A correlation was run for the "civic participation," "weak tie participation," and "interactive civic messaging" indices due to their low Cronbach's alpha scores (.402, .601, and .603, respectively; all other Cronbach's alpha scores were above .700). Within the "interactive civic messaging" index, there were ten significant positive relationships (out of a possible 15; the five other relationships were not statistically reliable). Within the "weak tie" index, there were six significant positive relationships (out of a possible 10, the four other relationships were not statistically reliable). Within the "civic participation" index, there were only five significant relationships (out of a possible 10; the five other relationships were not statistically reliable). However, one relationship, that between survey items 1 (how often during the past year have you went to a club meeting) and 3 (how often during the past year have you worked on a community project), had a significant negative reaction, with a Pearson's correlation of -.182. Because the indexes had been used previously and because there was no clear pattern in the correlations, all items for these three indexes were kept in subsequent analyses.

Descriptive statistics of these variables are summarized in Table 1.

Index	Mean	SD	n	Min	Max
OIS	3.48	.82	149	1	5

WTS	3.59	.97	147	1	5
ICM	1.86	.60	144	1	3.67
IPD	3.84	.91	149	1	5
SNM	2.44	.95	140	1	5
CIV	2.69	.72	158	1	4.2
WTP	2.61	.74	158	1	4.8

Table 1. Descriptive Statistics of Key Variables

To examine the effects of online information seeking and weak tie seeking on citizen communication, both online and offline, on civic participation, both formal and informal, a cross-sectional regression analysis was performed. This was a step-wise regression analysis, meaning that the results provided indicate the strength of the variables. This analysis yielded Beta coefficients and R-squared values existing between each variable. The results of this regression analysis are summarized in Figure 5:

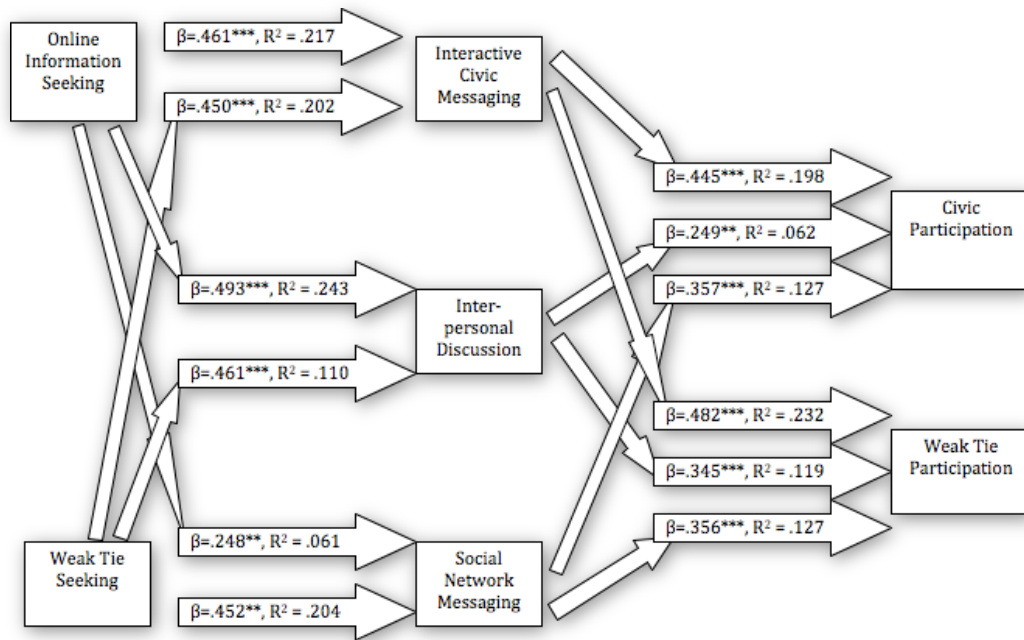


Figure 5. Regression Analysis of Revised Information>Communication>Participation model
Note: Standardized path coefficients and Cronbach's Alphas are reported.
 $**p < .01$. $***p < .001$.

The relationships observed here support the view that informational and weak tie use of media contributes to citizen communication, both online and offline. Specifically, indi-

vidual differences in online information seeking and weak tie seeking are positively associated with interactive civic messaging ($\beta=.461, p < .001$ for online information seeking; $\beta=.450, p < .001$ for weak tie seeking). Similarly, data show that cross-sectional variation in online information seeking and weak tie seeking are strong positive predictors of interpersonal discussion ($\beta=.493, p < .001$ for online information seeking; $\beta=.461, p < .001$ for weak tie seeking). Data also show that online information seeking and weak tie seeking are strong predictors of social network messaging ($\beta=.248, p < .003$ for online information seeking; $\beta=.452, p < .002$ for weak tie seeking). These results are consistent with prior research, such as that of Shah (2005), that finds a connection between levels of information seeking and interpersonal communication. They also provide support for hypothesis 1, as weak tie seeking is shown to have a significant and positive association with interactive civic messaging ($\beta=.450, p < .001$), interpersonal discussion ($\beta=.461, p < .001$), and social network messaging ($\beta=.452, p < .002$). Collectively, individual differences in online information seeking and weak tie seeking account for 41.4% of the variance in interactive civic messaging, 35.3% of the variance in interpersonal discussion, and 26.5% of the variance in social network messaging.

Also of interest is the effect of citizen communication (interactive civic messaging, interpersonal discussion, and social network messaging) on both formal and informal civic participation (civic participation and weak tie participation). Again, the relationships observed support the view that citizen communication contributes to civic participation. Specifically, interactive civic messaging ($\beta=.445, p < .001$), interpersonal discussion ($\beta=.249, p < .002$), and social network messaging ($\beta=.357, p < .001$) yield significant positive associations with formal civic participation. Further, interactive civic messaging ($\beta=.482, p < .001$), interpersonal discussion ($\beta=.345, p < .002$), and social network messaging ($\beta=.356, p < .001$)

yield significant positive associations with weak tie participation. That is, respondents who frequently engaged in communicative action through either interpersonal or computer-mediated channels are more likely to exhibit high levels of civic engagement. The three communicative action variables accounted for 38.7% of the variance in formal civic participation, and for 47.8% of the variance in weak tie participation. These data support hypothesis 2, as social network messaging is shown to have a significant and positive association with civic participation ($\beta=.357, p < .001$) and weak tie participation ($\beta=.356, p < .001$). There is also support for hypothesis 3, as weak tie participation is shown to be equally or more strongly associated with citizen communication, as shown in Table 2.

	CIV	WTP
ICM	$\beta=.445, p < .001$	$\beta=.482, p < .001$
IPC	$\beta=.249, p < .001$	$\beta=.345, p < .001$
SNM	$\beta=.357, p < .001$	$\beta=.356, p < .001$

Table 2. Effect of Citizen Communication on Civic Participation and Weak Tie Participation

The data provide adequate support for Shah’s theorized causal structure among these variables, leading from information seeking behaviors to citizen communication, resulting in civic participation. Moreover, the use of social networks to search for weak ties and to communicate is significantly positively associated on a level similar to that of online information seeking, interactive civic messaging, and interpersonal discussion. Additionally, weak tie participation is significantly positively predicted by interactive civic messaging, interpersonal discussion, and social networking on a level greater than that of civic participation.

The mean score for question 37, forwarding someone a link on a social network, was 2.45, indicating that users are passing information through social networks.

Media preference data indicate that the Internet is the most popular source of news, with 63 of the 158 respondents reporting that they use it most often. The second-most popular source of news was the newspaper, with 28 respondents claiming it as their primary source of news.

Phase Two: Follow-up Qualitative Survey

This analysis was qualitative in nature, and was intended to illuminate the way users of social networks are creating and maintaining weak ties online. A total of 36 individuals provided an email address in response to question 50 of the quantitative survey, indicating their willingness to take part in this additional qualitative survey. Of those addresses, only 33 were active. Ultimately, only 14 respondents provided data for phase two of the study. The mean scores for the weak tie seeking and social network messaging indices were above 3.5 for all 14 individuals. As Creswell (2003) noted, follow-up qualitative data can provide insight about the quantitative data, and in this instance, into the social capital-amassing behaviors of users of online social networks.

Section 1 featured questions regarding the role of communication in civic participation. Responses indicated a tendency to use these technologies to maintain ties over greater temporal and spatial distances. Question 16, “How often do you use social networks to communicate with friends who don’t live near you?” elicited the following responses:

“I often use facebook to ask friends from high school or college what they're up to. They do the same of me. If someone will be in the area, they often use facebook to contact me and see if I'd like to meet up with them.”

“I moved to Los Angeles two years ago, and none of my friends followed. Now that it's been a few years, the ‘I miss you’ phone calls and personal emails have all but ceased. I

check my newsfeed pretty much every day as my source for what the hell everyone is doing back in Missouri, or in the various regions to which the lucky ones have escaped.”

For question 16 and all others in this section of the survey, respondents were asked to provide additional details where possible. Following this, they were given an opportunity to share general comments. The following quotes were provided for survey item “Others?” The responses illuminate some specific activities of users of online social networks, and give insight into their motivations.

“I use facebook or myspace to view pictures of friends as a means of seeing what they're up to.”

“Check dates on people’s birthdays and subsequently send them well wishes. Stalk people I don’t like or who hurt me in some way in the hopes that their life now sucks.”

Section 2 featured questions about how they use social networks. Question 6 asked respondents how social networks enabled them to engage in diversion, personal relationships, personal identity, and surveillance activities (detailed in the survey, which can be viewed in Appendix B.)

The following responses provided for “personal relationships” reiterate the value of these technologies for communicating over temporal distance:

“Friends and I keep up with each other through posts on facebook walls, and usually read other people's to keep updated.”

“Most of my best friends are just like me – busy and off doing things in various regions of the country or world. Facebook has given us a fantastic way to stay in touch: see photos, updates, etc.”

The following response was provided for “personal identity:”

“If I don't remember a name, I'll check it up on facebook.”

The following response was provided for “surveillance:”

“Most times this is my only way of knowing who is engaged, who has new jobs, et cetera.”

Section 3 evaluated the quantity and quality of network utilization by survey respondents. Question 11 asked friends what kinds of conversations they have on online social networks. The response provided shows how online social networking can lead directly to weak tie participation:

“I keep up with a few select friends that I don't see much outside of class. Usually just observations about our days, catching up on recent activities, maybe debating movies or interesting things happening in the area. Sometimes we'll arrange to meet up.”

Discussion

This thesis attempts to determine how users create and utilize weak ties to amass social capital in online social networks such as Facebook.com. Adapting Shah's (2005) theoretical model, this thesis seeks to illuminate the impact of Granovetter's (1973) weak ties in online social networks on Putnam's (1995) theory of social capital.

This analysis provides several insights about how weak ties are created and maintained to amass social capital in online social networks. There is considerable support for the revised model, indicating that weak ties may play an important role in Shah's (2005) information>communication>participation model. Seeking weak ties in online social networks encourages citizen communication both online and offline, which in turn spurs civic participation. As civic participation was measured as an index of activities that Putnam (1995) identified as being generators of social capital, this indicates that the use of websites such as Facebook.com strongly influence levels of social capital amassment. What is most intriguing in these findings is that online communication - either on social networks or via email or IM - is more predictive of civic participation than offline, interpersonal discussion. This signals support for Lin's (1999) conclusion that "civil society, instead of dying, may just be evolving to become more networked and expansive."

The observed relationships point to the significance of weak ties in seeking information and communicating with other citizens. Hypothesis 1 tested the influence of Granovetter's (1973) weak ties on Shah's indices of citizen communication as well as an index of questions about online communication specific to online social networks. Using social networks to communicate with distant friends, to get to know acquaintances, to put names with faces, to meet new friends, and to join groups of people with shared interests did increase the

amount of communication respondents engaged in, both online and offline. Weak tie seeking has nearly an equal influence as online information seeking on interactive civic messaging and interpersonal discussion. Weak tie seeking is significantly more influential than online information seeking on social network messaging. This is to be expected, since measures of weak tie seeking and social network messaging both imply use of online social networks. It is nonetheless important, however, as it indicates that just as people searching for information online, on television or in a newspaper seek subsequently to communicate with others (Shah, 2005), people who create and maintain weak ties on social networks are inclined to engage in communication, often through online social networks. This supports Wellman's (2001) claim that communities are becoming less group-oriented and increasingly embedded in social networks.

Wellman's dichotomy may be false, as these two options may not be mutually exclusive - communities may actually just be expanding due to the supplementary effect of online social network use. A quote provided in response to Question 16 of the qualitative survey clarifies how this occurs: "I moved to Los Angeles two years ago, and none of my friends followed. Now that it's been a few years, the 'I miss you' phone calls and personal emails have all but ceased. I check my newsfeed pretty much every day as my source for what the hell everyone is doing back in Missouri, or in the various regions to which the lucky ones have escaped." This user indicated that after a given period of geographical separation, levels of active interpersonal communication decreased. However, with the use of online social networks, less active forms of weak tie maintenance extend the temporal and geographic distance of the community.

Data from the quantitative survey showed that the weak tie seeking index had a Cronbach's alpha of .770. Qualitative data suggest that communication over distance and

time is the most important feature of social networks in utilizing weak ties. The following quote indicates the value of Facebook.com, a social network, in communicating over distance:

“I moved to Los Angeles two years ago... and none of my friends followed. Now that’s it been a few years, the “I miss you” phone calls and personal emails have all but ceased. I check my newsfeed pretty much every day as my source for what the hell everyone is doing back in Missouri, or in the various regions to which the lucky ones have escaped.”

Communication over time is highlighted in this quote:

“Most of my best friends are just like me – busy and off doing things in various regions of the country or world. Facebook has given us a fantastic way to stay in touch – see photos, updates, et cetera.”

One respondent also indicated support for the use of social networks to put names with faces, stating “if I don't remember a name, I'll check it up on facebook.”

The questions provided for this index were drawn from prior research. The list was not intended to be exhaustive, and the following quotes suggest that in addition to the creation and utilization of weak ties, users are also tending to the maintenance of weak ties in their social networks using the Internet. Respondents made this clear when they said “I use facebook or myspace to view pictures of friends as a means of seeing what they're up to,” “friends and I keep up with each other through posts on facebook walls, and usually read other people's to keep updated,” “most times this is my only way of knowing who is engaged, who has new jobs, et cetera,” and when one respondent stated they he or she uses Facebook.com to “check dates on people’s birthdays and subsequently send them well wishes.” Overall, respondents noted a tendency to use online social networks to maintain social ties over temporal and geographical distances.

Respondents also indicated that some of this online communication leads to offline meetings, when they stated the following:

“I keep up with a few select friends that I don't see much outside of class. Usually just observations about our days, catching up on recent activities, maybe debating movies or interesting things happening in the area. Sometimes we'll arrange to meet up.”

“I often use facebook to ask friends from high school or college what they're up to. They do the same of me. If someone will be in the area, they often use facebook to contact me and see if I'd like to meet up with them.”

In each instance, the use of social networks is leading to meeting, which is a form of civic participation and a potential generator of social capital. Social networks are enabling users to amass social capital.

This conclusion is supported by the quantitative data, which indicate that using social networks to communicate significantly determines rates of civic participation and social capital amassment. Hypothesis 2 tested the influence of citizen communication in online social networks on measures of civic participation (Putnam, 1995; Shah, 2005) and alternative forms of civic participation (weak tie participation) identified by Putnam in 2001. Using social networks to discuss current events with someone, to get someone to volunteer, to organize a party, to organize a group meeting or event, or to forward someone a link increases civic participation and weak tie participation. While interactive civic messaging was found to be more determinative of both forms of civic participation, social network messaging was actually found to be significantly more influential than interpersonal discussion of both civic participation and weak tie participation, both indices of social capital-amassing behaviors. The conclusion to be made is that online communication - either on social networks, or via email or IM - is more predictive of civic participation than offline, interpersonal discussion.

Katz et al.'s (1955) two-step flow model states that the media distribute information to opinion leaders, who then interpret and disseminate information to the mass public. Over five decades later, this theory still has predictive power. However, three-fourths of today's youth see the Internet as *the* most useful source of information (Delli Carpini, 2000), indicating that the media landscape is shifting. More than 83% of respondents in this study had an account on Facebook.com, and they passed an average of between three and five links per week. Opinion leaders using these tools are predicted to be more influential than their peers 50 years ago, as this study finds both interactive civic messaging and social network messaging to be more strongly associated with civic participation than interpersonal discussion, which was the only one of the three existing in 1955. Media outlets such as newspapers and television news stations take advantage of this new distribution channel by sharing their news in digital format online. Transmission of news media is moving from the bowling alley to Facebook.

Finally, the observed relationships indicate support for Hypothesis 3, which predicted that all forms of citizen communication lead to both Putnam's original and his updated definitions of civic participation. Importantly, Putnam's 1995 measures of civic participation (going to a club meeting, doing volunteer work, working on a community project, going to a community or neighborhood meeting, or working on behalf of a social group or cause) are all less strongly influenced by citizen communication than are the social capital-amassing behaviors he identified in 2001 (going to a party or social gathering, a bar or tavern, a concert, a church social event, or a sporting event). This finding indicates that these informal gatherings of people are just as important in the amassment of social capital as participation in formal associations such as bowling leagues, at least within this sampling of young, educated social network users.

It is worth noting that the Cronbach's alpha scores for both the weak tie participation and civic participation indices were below .700. In fact, the Cronbach's alpha for civic participation was only .402. This index was taken item-for-item from Dhavan Shah's (2005) study, which found a Cronbach's alpha of .780. It seems that this sample of young, well-educated, socially networked individuals differs from those who constituted the DDB Needham Life panel study from which Shah drew his data. Future studies exploring the difference between the items in these variables might shed light on how and in what contexts social capital is being generated by social network users. As the percentage of people using facebook increases worldwide, such research could offer insight into how the process of social capital amassment is currently shifting due to the widespread adoption of online social networking technologies.

How do users of online social networks create and utilize weak ties to amass social capital? First, they seek weak ties, which encourages citizen communication. Have created these ties online, users are inclined to utilize them to communicate online, often on social networks. This online communication, in turn, spurs civic participation. In fact, such online communication is more predictive than offline communication of subsequent civic participation. Thus, media outlets wishing to encourage civic participation (which, coincidentally, Shah's (2005) model showed to be strongly associated with newspaper and television hard news use) should make their content available digitally. Opinion leaders will then communicate this information to friends online, thereby burnishing their credentials as an opinion leader on a particular issue, and amassing social capital.

Limitations

The sample for this survey had an average age of 22, and the oldest respondent was only 29. Therefore, these findings cannot be said to hold true for all age groups. However, as this study focused on the role of social networks in creating and maintaining weak ties, and social networks such as Facebook.com are college-based, these findings are valuable.

The sample for this survey was also better-educated than the general population. 138 of the 158 respondents in the quantitative survey had completed some college, and 82 had already completed college. Future research on how the “digital divide” existing between the rich and poor or the educated and uneducated that is specific to social network use is warranted.

These data offer a snapshot of how users were creating and maintaining weak ties in online social networks at the time of research. However, subsequent to the collection of data, the algorithm for the “people you might know” feature of Facebook.com became more sophisticated and prominently positioned. This and similar evolutions of social networks demonstrates how quickly the networks are adapting and evolving. The findings of this study would thus be worth comparing to other samples and compared throughout the years. Future studies that measured new aspects of the sight would generate data that might further illuminate the practices of users of online social networks. In the example provided, a future study that asked about the ‘people you might know’ feature might provide better understanding of how weak ties are created on these networks.

The low number of responses for the qualitative phase of this study leaves room for future studies based on the findings of this one which examining how users create and utilize social capital in online social networks.

Future studies could provide further verification and extend the findings of this thesis. Studies of the particular functions of online social networks might give further insight into how users create and maintain weak ties online. Studies comparing and contrasting professional networks such as LinkedIn.com with social networks such as Facebook.com might help explain the role user motivation plays in social capital creation and amassment. Studies of communities with a high degree of online social network use might pull apart the way that online social networks supplement, as opposed to replace, communication in communities.

This study lends support to the notion that online social networks are serving as a new form of “common space,” where network ties are being created and maintained and social capital is being generated. The information acquired through these networks, the connections made or maintained over distances of time and space, and the subsequent engagement in civic and weak tie participation are supplementary, as opposed to substitutive, in nature. Not everyone necessarily benefits from the use of sites such as Facebook.com, but those who engage in online information seeking or weak tie seeking in these new forums are statistically significantly more likely to subsequently communicate with their fellow citizens, and then to engage in civic participation activities proven to be generators of social capital. As communities move or expand online, absence from this forum is predicted to come increasingly at the cost of social capital relative to networked peers, which may in part explain the recent widening of the “digital divide.”

This population of this study was predominantly highly educated, younger, and “wired in” – 84% had accounts on facebook.com. Future studies analyzing levels of civic and weak tie participation among non-users would give insight into the role that online social networks play in the creation and maintenance of social ties, and also the difficulties encountered by individuals living offline in an increasingly digital society.

Appendix A

Social Networks Survey (Quantitative)

of Named Variables: 7

Recruitment Message

Social Networks have only been around for a couple of years, but already they're changing the way we communicate with one another. If you could spare a few minutes of your time to share your thoughts via the survey at the link below, I'd greatly appreciate it. If you could forward this recruitment message on to two or more of your friends, that would be even more helpful!

Survey.jonthon.org

Thanks sincerely,
Jonthon Coulson

Introduction

Thank you for sparing a few minutes of your time to complete this survey. This study attempts to determine how people our age are sharing information. Specifically, we are looking at how online social networks affect certain aspects of your daily routine. In this survey, there will be seven sets of questions, as well as a small set of general questions at the end. The survey should take no more than 10 minutes. The software used for this survey keeps your answers completely confidential, so please answer freely and to the best of your ability. If you have any questions about the survey form or our research, please contact Jonthon Coulson at JonthonCoulson@mizzou.edu or (618) 792-8313. If the survey in any way offends you or you want reassurance of your privacy, please contact the University of Missouri Institutional Review Board at (573) 882-9585. You must be 18 years of age to participate in this survey. **Completion of this survey form is your indication of agreeing to participate in this research.** You may discontinue your participation at any time without penalty.

Question Wording

Please indicate how often during the past year you have engaged in this activity by selecting a number from 1 to 5.

-
- | | |
|---|-----------------------|
| 1 | None in the past year |
| 2 | 1-4 times |
| 3 | 5-8 times |
| 4 | 9-12 times |
| 5 | 13 or more times |
-

Civic participation:

- 1 Went to a club meeting.
- 2 Did volunteer work.
- 3 Worked on a community project.

- 4 Went to a community or neighborhood meeting.
- 5 Worked on behalf of a social group or cause.

Weak tie participation:

- 6 Went to a party or social gathering.
- 7 Went to a bar or tavern.
- 8 Went to a concert.
- 9 Went to a church social event.
- 10 Went to a sporting event.

Online information seeking:

- 11 Visited a news Web site (e.g., CNN.com, drudgereport.com, DailyKos.com)
- 12 Received news or sports information via the Internet.
- 13 Visited the Web site of a government agency.
- 14 Visited the Web site of a social group or cause.
- 15 Visited the Web site of a politician.

Weak tie seeking:

- 16 Used social networks to communicate with friends who don't live near you.
- 17 Used social networks to get to know acquaintances better.
- 18 Used social networks to put faces with names.
- 19 Used social networks to meet new friends.
- 20 Used social networks to join groups of people who share your interests.

Interpersonal discussion:

- 21 Talked about current events with classmates offline.
- 22 Talked about current events with neighbors offline.
- 23 Talked about current events with friends offline.
- 24 Talked about current events with family offline.
- 25 Talked about current events with acquaintances offline.

Interactive civic messaging:

- 26 Discussed current events with someone over email or IM.
- 27 Contacted a public official because of an email or IM you received.
- 28 Emailed the editor of a newspaper or magazine.
- 29 Emailed a politician.
- 30 Used email or IM to recruit someone to volunteer.
- 31 Used email or IM to organize a party.
- 32 Used email or IM to organize a community or social event.

Social network messaging:

- 33 Discussed current events over social networks with someone.
- 34 Tried to get someone to volunteer with social networks.
- 35 Used social networks to organize a party.
- 36 Used social networks to organize a group meeting or event.
- 37 Used social networks to forward someone a link.
- 38 Used social networks to obtain lecture notes.
- 39 Used social networks to "poke" someone.

Demographics and Background

40. Please rank the following news sources according to which you use the most.

- 1 Newspaper
- 2 Radio
- 3 TV
- 4 Internet
- 5 Friends

41. Which of the following web sites do you have an account with? (Check all that apply.)

- Facebook.com
- MySpace.com
- Friendster.com
- Lala.com
- LinkedIn.com
- Other (please specify:____)

42. Which of the following web sites do you prefer?

- 1 Facebook.com
- 2 MySpace.com

43. How many times each day you log in to Facebook.com?

- 1 None
- 2 1-4 times
- 3 5-8 times
- 4 9-12 times
- 5 13 or more times

44. What is your gender?

- 1 Male
- 2 Female

45. What is your age?
(Open-ended)

46. What is the highest level of education you have completed?

- 1 Some high school
- 2 High school graduate
- 3 Some college
- 4 College graduate
- 5 Some graduate school
- 6 Master's degree
- 7 Doctorate

47. How would you best describe the political views you hold?

- 1 Very Conservative
- 2 Conservative
- 3 Moderate
- 4 Liberal
- 5 Very Liberal
- 6 Apathetic

48. How would you describe your home community?

- 1 Rural
- 2 Suburban
- 3 Urban

49. If you have any additional thoughts or comments, feel free to share them below.

(Open-ended)

50. If you would be willing to participate in an additional qualitative interview on this topic, please submit your email address in the box below.

(Open-ended)

Appendix B

Personal Interview Script (Qualitative)

of Items: 13

Interview invitation

Recently, you completed a survey on social networks. In that survey, you indicated that you would be willing to participate in an additional qualitative interview. I'd like to take you up on that offer.

The interview can be conducted either by phone or, if you are in Columbia, MO, in person. If you'd prefer to speak with me by phone, please respond with a phone number and a time that works best for you. If you'd prefer to interview in person, please respond and indicate a place with public access to a computer and a time that works best for you.

The interview should take between 20 and 30 minutes. Again, I really appreciate your willingness to share your thoughts on how people our age are using social networks.

Thanks sincerely,
Jonthon Coulson

~Section 1. Follow-up on weak tie variables~

1. Include each participant's scores for the following questions. Ask for details about any item the participant scored as a 4 or 5.

(How often do you use social networks to...)

Weak tie seeking:

- 16 Communicate with friends who don't live near you.
- 17 Get to know acquaintances from class better.
- 18 Put faces with names.
- 19 Meet new friends.
- 20 Join groups of people who share my interests.

Social network messaging:

- 33 Discuss current events with someone.
- 34 Try to get someone to volunteer.
- 35 Organize a party.
- 36 Organize a group meeting or event.
- 37 Forward someone a link.
- 38 Obtain lecture notes.
- 39 "Poke" someone.

Additional

- Drop friends a line when your schedules don't align.
- Keep in touch with members of the military.
- Catch up with long-lost friends from high school.
- Find job openings.
- Locate a ride.
- Arrange a date.

Get information you find useful.
Others?

~Section 2. Attitudes~

2. Please indicate your level of agreement with the following statements.

- | | |
|-----------------------|--------------------|
| 1 Definitely Disagree | 4 Moderately Agree |
| 2 Generally Disagree | 5 Generally Agree |
| 3 Moderately Disagree | 6 Definitely Agree |

- * You really can't trust the news media to cover events and issues fairly.
- * I need to get the news (world, national, sports, etc.) everyday.
- * I am interested in politics.
- * Surfing the Internet is more interesting than watching TV.

3. With more and more information available in our daily lives, how would you rate the following in their importance? (On a scale of 1 to 5, with 1 being not important and 5 being very important)

- | | |
|--------------|-------------------------------|
| * Newspapers | * Magazines |
| * Radio | * Television |
| * Internet | * Interpersonal communication |
| * Email | * Social networks |

4. What news sources do you monitor regularly?

5. On a scale of 1 to 5, 1 being never and 5 being frequently, how often do you forward or receive links to the following?

- | | |
|---|-------------------|
| * Video news clips | * Music |
| * Movie trailers | * Music videos |
| * Blogs | * Podcasts |
| * News sites | * RSS feeds |
| * Political information | * Political jokes |
| * "Un-news" - celebrity news, sports news, random facts, etc. | |

6. Technologies like social networks allow us to do many different things. How often do you engage in each of the following? Provide examples and details where possible.

- * diversion (escaping the constraints of routine, de-stressing, or just killing time)
- * personal relationships (keeping in touch with distant friends, finding old friends, and maintaining friendships with other busy people)
- * personal identity (putting faces with names, checking out who is in your classes, finding people who share your interests)
- * surveillance (monitoring information important to you, keeping up with friends' activities, staying up to date with groups you're involved in)

~Section 3: Social network usage details~

7. Which social networks are you registered on, and which do you prefer? Why?

8. How many of your online friends do you not know offline?
How many of your offline friends do you not know online?

<Instruct participants to log in to Facebook.com to answer the next three questions.>

9. Click on “My profile.” What number is listed for Missouri friends? Friends from other schools?

(Record local size _____, other size _____)

10. Do you have a policy for accepting friends, or do you accept all invitations you receive?

11. What are your favorite groups? Do you ever comment in them, or any other groups?
What sorts of conversations do you have?

12. Have you ever started any groups? If so, what are their titles and how many members do they have?

13. Open your messages. Summarize the last 5 messages you sent and received.

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VITA

Jonthon Coulson was born in Olney, Illinois in 1983. He attended the University of Missouri as an undergraduate, attaining a Bachelors degree in Journalism with a minor in Linguistics in 2005. He then completed his graduate coursework at the same university by 2006. Subsequent to the completion of his academic studies, he became a member of the 2006 Teach For America – New York City corps, and taught high school English as a Second Language for two years at the Bronx Center for Science and Mathematics in the South Bronx. Following this, he was granted a Fulbright English Teaching Assistantship, and moved to Indonesia for the 2008-2009 year. Upon his return, he became employed as a 7th and 8th grade teacher of English as a Second Language at Bronx Preparatory Charter School, and enrolled in coursework at Pace University in pursuit of his Masters of Teaching – Teaching of English to Speakers of Other Languages degree (anticipated graduation date: May, 2010).