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THE USE OF ONLINE SOCIAL NETWORKING BY RURAL YOUTH AND ITS EFFECTS ON COMMUNITY ATTACHMENT

In recent years, an increasing amount of attention has been placed on improving access to Information and Communication Technology in the United States. With the rapidity at which broadband construction projects are dotting America, it is important to understand the social impacts of these infrastructural projects. One particularly salient issue is whether access to the Internet would decrease the involvement of youth in their home communities since youth and issues of talent retention are crucial to the long-term viability of rural communities. However, findings on this topic have been a mixed bag with some studies suggesting that the use of online social networking decreases community involvement while others have found that it may maintain or even increase community involvement. This study set out to clarify the conflicting findings and in the process, it has found support for both the displacement effect as well as an augmentation effect. The dual processes suggest that merely examining time spent on social networking sites does not provide a complete picture of the effects of Internet use on community involvement. The nature of the interactions and the participants in the online social networking also play an important role. For rural community leaders working towards the long-term viability of their communities, the findings suggest that efforts should be directed towards mitigating the displacement effects of Internet use while harnessing popular Internet applications such as social networking sites to augment the involvement that youth have in their home communities.

Keywords social networking; ICTs; young people; rural studies

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Community leaders in rural America face many challenges unique to their locations. Many of them have to deal with challenges such as 'bright flight' and a lack of economic opportunities. A good number of them also lack access to reliable broadband connections that they can harness to build their communities and strengthen the pillars of rural social life. Without access to high-quality Internet, rural community leaders lack the means to foster online social interactions within the community that might increase community attachment and reduce out-migration (Gregg *et al.* 2007). However, they may be able to look forward to better quality Internet soon because public and private institutions are paying more attention to improving access to information and communication technology (ICT) in rural America.

The American Recovery and Reinvestment Act (ARRA) of 2009 (ARRA of 2009, Pub. L. No. 111-5, 123 Stat. 115 2009) recently allocated $7.2 billion to improve broadband Internet service for rural areas. Of the $7.2 billion, $4.7 billion was assigned to the Commerce Department's National Telecommunications and Information Administration to implement the Broadband Technology Opportunities Program aimed at improving broadband access for both underserved areas and public safety agencies, and providing broadband education, training and support. Through financing and grant funding, this program is aimed at the expansion of broadband service in rural areas to provide access to high-speed service and facilitate economic development in rural locations (LaRose *et al.* 2008). The federal funding could not have come at a better time. Statistics from the Pew Internet home broadband report in August 2010 indicate the persistence of a rural-urban digital divide that calls out to be addressed. Only 50 per cent of adults in rural regions have broadband access at home compared with 70 per cent in rural regions (Smith 2010). With the current federal investments in broadband infrastructure, it is hoped that the rural-urban digital divide can be reduced and rural community leaders can soon harness high-quality Internet to reap social benefits for their community. By using technology effectively, they can retain energetic and well-educated youth who will continue to provide human capital for rural enterprises.

With broadband access, community leaders can also create new economic opportunities by encouraging residents to find employment with urban enterprises while still residing in rural communities, thus stemming out-migration (Speare *et al.* 1982). In doing so, they also cultivate a cadre of telecommuters who can work with urban firms while contributing to the entrepreneurial resources of the rural communities. By cultivating a youthful rural work force with a strong sense of community attachment, community leaders can ensure the longevity of their hometowns. Beyond economic benefits, community leaders can also use broadband access to produce other social benefits. Rural broadband networks have been found to improve access to health care and education (Jenkins 2003) and ameliorate other conditions of rural life that lead to out-migration and despair (Kellogg Foundation 2001). To mitigate

out-migration, community leaders can also try to encourage intra-community interaction. Communication between residents within a community has been found to increase group membership and attachment and lower migration intentions (Fernandez & Dillman 1979). All in all, rural community leaders can potentially preserve the viability of their hometowns by nurturing young professionals skilled in ICT who can create links to regional, national, and global economies while retaining a strong sense of community attachment.

Despite the promise of broadband access, some researchers are less optimistic about the benefits that the Internet might bring. Even though the Internet may increase community attachment, some researchers have found that psychological well-being may be negatively affected by Internet usage through a phenomenon known as the Internet paradox (Kraut *et al.* 1998). When Internet users spend time online, they tend to do so at the cost of strong and meaningful relationships with people within physical proximity. In displacing their strong local ties with weak virtual ties, Internet users are also reducing their stock of social support that can buffer the negative impact of life's stresses (Kraut *et al.* 1998). The researchers also found that heavy Internet use was associated with diminishing tendencies to live in one's local area as well as being less knowledgeable about that area in a subsequent study of urban Internet users. These findings have serious implications for rural community leaders. If Internet use does indeed reduce psychological resilience to stress and weaken the ties that youth have with their local community, rural community leaders would do well to anticipate and ameliorate the negative impact lest they end up with a generation of disconnected youth.

However, the conclusions from the Internet paradox studies conflict with other findings and the question of the effects of Internet use on community attachment remains unresolved. On one hand, scholars studying development have found that broadband use has the potential to increase intra-community communication which will strengthen community attachment. On the other hand, scholars studying online interaction have found that broadband use can strengthen relationships with people outside the local community to the detriment of local ties and opportunities to cooperate with others in the same community.

Despite these mixed findings, we believe that previous research may not actually be in conflict. We think that there is a dual mechanism at work here. The first component increases the sense of community attachment. The second component decreases community attachment. Based on previous studies on online social networking, we believe that when people communicate online with other residents in the local community, their sense of community attachment will be strengthened and when they communicate online with people outside the local community, their sense of community attachment will be weakened. Thus, we think that, that mere time spent on the Internet will not accurately predict whether the sense of community attachment will

increase or decrease. We have to consider who are involved in the interaction. In this study, we examine the uses of broadband Internet by rural youth. Specifically, we are interested in their use of online social networking and the effects of its use on their sense of community attachment.

We believe that the contribution of this study clarifies the mixed findings from previous studies. Other than the theoretical clarification, we believe that the findings can also be applied to the implementation of broadband projects. With broadband infrastructural projects dotting the American landscape, rural community leaders need a more informed understanding of the affordances of good quality Internet access. If broadband access increases community attachment, community leaders should think of ways to encourage the youth in their communities to use the Internet. If broadband access decreases community attachment, they should think of ways to mitigate the negative effects.

Literature review

We are interested in examining the impact of online social networking by rural youth on their sense of community attachment because of the theoretical and practical contributions that this inquiry might yield. Practically, understanding the relationship between online social networking and a sense of community attachment may provide community leaders with a means to sustain the vitality of their hometowns. Theoretically, untangling the mixed findings on the impact of online social networking will increase the usefulness and clarity of the theory of social capital. In the following sections, the interrelations between rural youth, online social networking and their sense of community attachment will be examined.

Out-migration and youth retention

Rural youth and their reasons for staying in their home communities determine the long-term viability of their hometowns. Without compelling reasons to stay, youth in rural communities are likely to leave their hometowns and not return. When that happens, they not only reduce the pool of potential workers who may contribute to the local economy but also reduce the economic viability of the rural communities. About half of rural youth do not return after leaving for college (Gibbs 1995) and the more educated they are, the higher the chances that youth will leave rural communities compared to their less educated cohort (Malecki 1988; Conroy 2000). Of those who leave, about half eventually return to their communities and are more likely to do so if the community has environmental amenities and high-quality medical and education institutions (Malecki 2003).

Candidates for return migration tend to be those who develop and sustain ties to the communities of their childhood. Individuals with familial and

community ties as well as good economic opportunities are also more likely to return to their home community (Heaton 1995). Thus, rural youth who have more extensive involvement in their local communities are also more likely to stay in their neighborhoods or return if they leave for college. They may also be more inclined to remain in their local communities if they strengthen the local ties that they have using online communication. Making sure that rural youth acquire the ability to form online ties with the local people is thus an essential component of digital rural development.

Social capital and online social networking

When rural youth create ties with people in their local communities in person or online, they are accruing social capital. Social capital refers to the 'collective value of social networks' (Putnam 1993). Social capital can be broadly divided into two types: bonding and bridging (Gittell & Vidal 1998). Bonding social capital functions by providing social and emotional support for individuals. It often refers to benefits derived from close strong ties such as family, relatives and close friends. These benefits usually have a high cost, like a substantial financial loan. On the other hand, bridging social capital functions by providing novel opportunities. It often refers to the benefits that can be derived from distal weak ties such as connections with acquaintances. This type of social capital is especially useful for transferring novel information that a person's close network might not have, like job opportunities that lie outside the work connections of one's closest ties.

Internet users can accumulate bonding and bridging social capital from relationships formed in online environments. In particular, users of online social networking can enhance their stock of social capital and produce other positive outcomes in the communities they are in (see Williams (2006) for a review). When Internet users develop relationships online, they also generate the same types of predictable social capital as their relationships offline (Williams 2006). For example, users of a particular online tool, Facebook, generally have higher levels of bridging social capital (Ellison *et al.* 2007). Using Facebook, users can maintain large, dispersed social networks because the online system reduces the costs of relationship management. However, the assumption that these online tools remove users from their geographic roots was not upheld. Lampe *et al.* (2006) found that Facebook users were mainly articulating previously established offline networks online, rather than forming new online networks. In other words, Internet users can derive both bonding and bridging capital from their online social networking activities. When Internet users accrue bridging social capital, they may not always be losing bonding social capital. In fact, they can even be strengthening the ties that they have offline with online interaction. Wellman *et al.* (2001) reached a similar conclusion in their study of online interaction and communities. In their study, the researchers found that people use

online interaction to supplement face-to-face communication and the online interaction did not reduce or increase the real-world interaction (Wellman *et al.* 2001).

Despite this optimistic finding that social networking can augment real-world social ties, other researchers have suggested a more pessimistic view about Internet use and community attachment. The researchers have found that Internet use has negative effects on community attachment (Kraut *et al.* 2002). Specifically, Internet users knew less about their local communities and they were more likely to want to leave their local communities (Kraut *et al.* 2002). Other researchers have found that online communities and virtual interaction do not lead to increased community participation (Kavanaugh & Patterson 2001).

Taken together, research on the effects of online social networking on community attachment still seems to lack concurrence. Even studies that are focused on the same topic of the social repercussions of the Internet have come to divergent conclusions. In his review of four academic surveys, Nie (2001) suggested that the simple explanation for the loss of sociability from Internet use is the 'inelasticity of time'. Where an association has been found between Internet use and sociability, Nie (2001) argued that the relationships were spurious because Internet users tended to be more socially connected in the first place.

We believe that the apparent contradiction came about because the nature of the online interaction was not fully explicated in previous studies. In our study, we attempted to fill two gaps identified in existing research by studying how rural youth use social networking. First, we are improving understanding of the effects of social networking on rural youth as opposed to urban users. Previous researchers have focused on an urban population (Kraut *et al.* 2002) and we are unsure if the negative impacts of Internet use found will be the same for rural users. In addition, they have also focused on urban college students. Rural youth may articulate different patterns of use since rural communities accrue social capital in markedly different ways than urban communities (Gilbert *et al.* 2008).

Second, we are clarifying the outcomes of social networking as a function of how it is being used as opposed to mere length of use. Previous research did not differentiate types of Internet use from one another. It is likely that time spent on the Internet and who the users communicate with may result in different outcomes depending on the nature of the online activities. Users may just be using these sites for entertainment or alleviating boredom instead of building social capital. By adding another dimension to Internet use, we believe that this study will provide a clearer understanding of the outcomes of using social networking.

Our interest in studying the confluence of rural youth, social networking and community attachment is also informed by three recent studies. The first study provided evidence that youth can develop a stronger sense of attachment to their communities if they are more involved in the community activities. The Youth Works project based at the University of Illinois (Siegel 2007) involved youth in compiling a directory of community volunteer activities and promoting the

use of the directory to their peers. Pre-post gains were observed in the perceptions of rural youth that there was a future role for them in their community, a possible indicator of increased social capital within local communities. More recently, Stern and Adams (2010) found that Internet use can enhance volunteerism and community attachment in rural communities. Qualitative data from their study suggest that online interaction is an important tool by which people engage in their local communities. Their engagement in the local community in turn augments their sense of attachment to their hometowns.

The third study provided statistical evidence for the dual-mechanism of Internet use in increasing and decreasing social capital simultaneously. This linkage between social capital and Internet use was studied in a causal model by Gregg *et al.* (2007). In this model, Internet use was related to a measure of self efficacy related to developing and maintaining social relationships. That in turn was related to expectations of desirable social outcomes of Internet use and that in turn was positively related to community attachment and negatively related to relocation intentions. However, a second mechanism that decreased community attachment was also uncovered. It was thought to originate with exposure to online resources from beyond the home community. The findings relating to the dual mechanism led us to believe that social networking can simultaneously increase and decrease the amount of community attachment rural youth feel towards their hometowns. But researchers are only beginning to uncover this dual-mechanism and, we believe that our study will improve our understanding of this phenomenon.

Proponents of modernization may argue that ameliorating out migration in rural communities is an anachronistic effort to preserve romanticized notions of Tocquevillian communities. But, we believe that this view of studies of rural communities overlooks the broader issue that there are many communities, groups and even countries that have to deal with the issue of bright flight. At the moment, bright flight is particularly salient for rural communities in America and we believe that choosing them as research sites will yield both practical and theoretical contributions. The potential applications, both theoretical and practical can benefit groups in other contexts beyond rural communities.

We also believe that studying online social networking behaviour of rural youth is a vitally important issue because we can learn about how to optimize the benefits afforded by the broadband infrastructural projects that are dotting rural America. The escalation of federal efforts to increase public investment in telecommunications technology for rural residents and their communities is unprecedented and calls attention to the social impact of broadband access and online social networking.

The increase in the broadband implementation projects heightens the concern that there are two mechanisms present in the relationship between the use of social media and community involvement, one that increases community attachment and one that decreases it. Thus far, the literature has been mixed on the role of online

social networking on community involvement and, we seek to clarify the dynamics of this relationship in our study. With the rapid increase in the number of broadband construction projects dotting America, it is important to understand how to maximize the positive social impacts of these investments. In particular, we are interested in increasing our understanding of the effects of online social networking on the sense of community attachment that rural youth feel for their hometowns. In increasing our understanding of this phenomenon, we believe that we may also be helping rural communities to remain viable in the long run.

Hypotheses and research question

Based on the recent findings on the social networking tendencies of rural youth, we believe that the more they use social networking sites, the more engaged they will be in their communities. Because rural youth tend to have online interaction with people they already know offline, we propose that online social networking will have an augmentation rather than a displacement effect. We also believe that rural youth who are more efficacious online will also be more involved in their communities because they have invested more time and effort online into developing relationships with people in their hometowns. We thus propose the following hypotheses:

H1: Online social networking is positively related to community involvement.

H2: Online social self efficacy is positively related to community involvement.

By community involvement we refer to participation in local in-person community activities.

We recognize that in proposing *H1* and *H2*, we had assumed that the rural youth spent more time interacting online with the people in their local communities that those outside. To verify previous findings about the networking tendencies of rural youth, we propose the following hypothesis:

H3: Frequency of interaction with local community members in an online environment using social media will be higher than online interaction with people who are not part of local community.

In a similar vein as the first set of hypotheses, we believe that the social ties that rural youth have will be related to their sense of community involvement. Both the intensity of their strong ties as well as their weak ties in their local communities will be related to their sense of community involvement:

H4: Bonding social capital is positively related to community involvement.

H5: Bridging social capital is positively related to community involvement.

H6: Frequency of online interaction with people in the same community is positively related to bonding social capital.

Next, to investigate the role that online social networking plays in the generation of social capital, we propose that:

H7: Online social networking is positively related to bonding social capital.

H8: Online social networking is positively related to bridging social capital.

Finally, we are interested if the quality of the Internet connection will affect the relationships that we investigated thus far. The impetus for implementing broadband infrastructural projects is based on the assumption that better Internet access will improve the economic and social conditions in rural communities and we propose the following research question to examine if our data supports this assumption:

Q1: What is the relationship of broadband use at home to community involvement?

Method

Data collection

We followed the total design method (Dillman 2000; Dillman *et al.* 2009) in conducting all surveys. For mail surveys, this entailed the use of a pre-notification letter; a mail survey with cover letter, incentive of a quarter, and a self addressed stamped return envelope; and a reminder post card. That was followed after a period of one week with a duplicate of the first mailing, minus the incentive payment. The addresses of high-school families were obtained through participating schools. These are four schools that were taking part in a social networking intervention designed for high-school students that connects them to career role models in their local communities. Only students who were not participating in the social networking intervention were invited and the surveys were addressed to individual students in grades 9 through 12. In two of the high schools, where the student population was small (about 100 and 300, respectively), all eligible students were invited. In the other two, systematic random sampling of the entire student populations was used to generate lists of about 300 students each). Parental consent forms and student assent forms were administered in the mailing that includes the student questionnaire. A total of 221

completed surveys were collected (74 from grade nine, 64 from grade 10, 52 from grade 11, 30 from grade 12 and one did not indicate the year in school). The overall response rate was 22 per cent.

Operational measures

The survey included indicators of community involvement, total online social networking use, online social self efficacy, frequency of online interaction, bonding and bridging social capital. The exact wording of survey questions and the (Cronbach's alpha) internal consistency coefficients for the multi-item additive indices constructed can be found in the appendix.

The dependent variable, community involvement, was operationalized as the willingness to help out in the local community after graduation, the willingness to spend time to support local activities and the amount of time spent participating in local activities.

Total online social networking use was operationalized as the amount of time that the youth spent on the sites on a typical weekday and a typical weekend day. A logarithm transformation was performed on both items and then summed to give the measure of total social networking sites use.

Bonding social capital was operationalized as the extent of agreement on Likert-type items which include: having a special person who is a real source of comfort, having friends who really try to help, being able to count on friends when things go wrong, having friends with whom to share joys and sorrows, having a special person who cares about feelings and being able to talk about problems with friends.

Bridging social capital was operationalized as: knowing someone in the local community who would ask the respondent to volunteer for a community project they are running, knowing someone who would give sound advice about career options and knowing someone there who would advise the respondent about volunteer activities.

The frequency of online interaction with people from the local community was assessed by the question 'Including email, instant messaging and social networking sites like Facebook, how often do you contact people from inside your local community online?' The frequency of online interaction with people from outside the community was assessed by the question 'Including email, instant messaging and social networking sites like Facebook, how often do you contact people from outside your local community online?'

Results

Table 1 shows the Pearson product-moment correlations among the dependent and independent variables. The relations between the variables were analysed

TABLE 1 Pearson product-moment correlations among dependent and independent variables.

Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*Mean*	*SD*
Community involvement	1							4.99	1.14
Total social networking sites use	−0.030	1						0.60	0.52
Online social self-efficacy	0.246**	0.368**	1					5.17	1.45
Frequency of contact with people from inside the local community	0.084	0.514**	0.451**	1				4.10	1.17
Frequency of contact with people from outside the local community	0.001	0.510**	0.363**	0.560**	1			3.35	1.34
Bonding social capital	0.364**	0.148*	0.211**	0.214**	0.073	1		5.76	1.05
Bridging social capital	0.448**	0.062	0.150*	0.138	0.151*	0.261**	1	5.30	1.13

*Correlation is significant at the 0.05 level (two-tailed).

**Correlation is significant at the 0.01 level (two-tailed).

using the bivariate correlation procedure found in SPSS Statistics 17.0 (SPSS, Inc. 2008). Regarding Hypothesis 1, the relationship between total social networking sites use and community involvement is null. However, in the multiple linear regression procedure conducted later, the total use of social networking sites was negatively associated with community involvement when controlling for the other independent variables. This relation is in the opposite direction of what we hypothesized.

Data were consistent with Hypothesis 2 with results showing that online social self efficacy is positively related to community involvement ($r = 0.25$, $p < 0.01$). Hypothesis 3 predicted that the frequency of online interaction with people from the same community will be higher than the frequency of online interaction with people outside of the community. A paired sample t-test was conducted and the results supported the hypothesis, $t(200) = 8.92$, $p < 0.001$. Rural youth tended to have more frequent online social interaction with people from the same local community ($M = 4.10$, SD $= 1.17$) than with people outside the community ($M = 3.35$, SD $= 1.34$).

Hypothesis 4 predicted that bonding social capital is positively related to community involvement and Hypothesis 5 predicted that bridging social capital (as operationalized in this study) is also positively related to community involvement. These were supported by the results which indicated that more bonding social capital was associated with higher community involvement ($r = 0.36$, $p < 0.01$). The results also indicated a strong positive correlation between bridging social capital and community involvement ($r = 0.45$, $p < 0.01$).

Hypothesis 6 predicted that online interaction with people in the local community is positively related to bonding social capital. Data were consistent with this hypothesis. Results indicated that the more frequently rural youth interacted online with people of the same local community, the more bonding social capital they reported having ($r = 0.21$, $p < 0.01$).

Hypothesis 7 predicted that the use of online social networking would be positively related to bonding social capital. This hypothesis was confirmed. The results indicate that the use of social networking tools was positively associated with bonding type of social capital ($r = 0.15$, $p < 0.05$). Hypothesis 8 predicted that use of social networking sites would be positively related to bridging social capital. Data did not support this hypothesis.

To better understand the relationships between the independent variables and community involvement, a standard multiple regression analysis was conducted, with community involvement as the dependent variable and total online social networking use, online social self efficacy, bonding social capital, bridging social capital, type of Internet connection, year in high school and the interaction term between total online social networking use and bonding social capital as the predictors.

As shown in Table 2, the results of the regression showed that the set of independent variables we examined accounted for a significant amount of variance in community involvement ($R^2 = 0.34$, $F(7,188) = 13.86$, $p < 0.001$). As previously noted, and contrary to our expectations, the total time spent using online social networking sites was significantly negatively related to community involvement ($\beta = -0.57$, $p < 0.001$), once other variables were included in the regression. As predicted, greater online social self efficacy ($\beta = 0.54$, $p < 0.001$), bonding social capital ($\beta = 0.71$, $p < 0.001$) and bridging social capital ($\beta = 0.99$, $p < 0.001$) were all strongly associated with increased community involvement. We did check to see if those with better Internet connections were more attached, and this variable approached significance ($\beta = 0.24$, $p = 0.0647$). Students reported if they had no Internet connection, a dial-up connection or broadband access at home and this was used as an indicator of the quality of Internet connection. We also included year in school as a predictor, in order to see if students became more or less involved as they approached the time when they would be leaving high school and either entering the workforce in town, or leaving for college. Indeed, year in school was negatively associated with involvement, suggesting that older high schoolers are less involved in their communities ($\beta = -0.27$, $p = 0.01$).

Because of the negative association between online social networking and community involvement, we explored for interactions between the social network site use and other variables. We wondered, for example, if those who had more social network self-efficacy, or who had higher social capital, would perhaps show a positive association between time spent using social network sites and their community attachment. The only interaction term

TABLE 2 Regression coefficients of total online social networking use, online social self efficacy, bonding social capital, bridging social capital, type of Internet connection, year in high school and the interaction term between total online social networking use and bonding social capital on community involvement.

	Unstandardized coefficients		*Standardized coefficients*		
Model	B	*Std. error*	*Beta*	t	*Sig.*
Constant	0.965	0.543	5.004	69.92	0.0001
Total online social networking use	−0.508	0.148	−0.574	−3.43	0.0007
Online social self efficacy	0.180	0.054	0.541	3.36	0.0009
Bonding social capital	0.283	0.070	0.709	4.07	0.0001
Bridging social capital	0.329	0.065	0.988	5.08	0.0001
Type of Internet connection	0.235	0.127	0.235	1.86	0.0647
Year in high school	−0.181	0.070	−0.272	−2.60	0.0101
Total online social networking use *x* Bonding social capital	−0.229	0.116	−0.646	−1.97	0.0498

Model summary

Model	*R*	R^2	*Adjusted* R^2	*Std. error of the estimate*
1	0.583	0.340	0.316	0.993

ANOVA

	Model	*Sum of squares*	*df*	*Mean square*	*F*	*Sig.*
1	Regression	95.620	7	13.660	13.857	0.000
	Residual	185.334	188	0.986		
	Total	280.954	195			

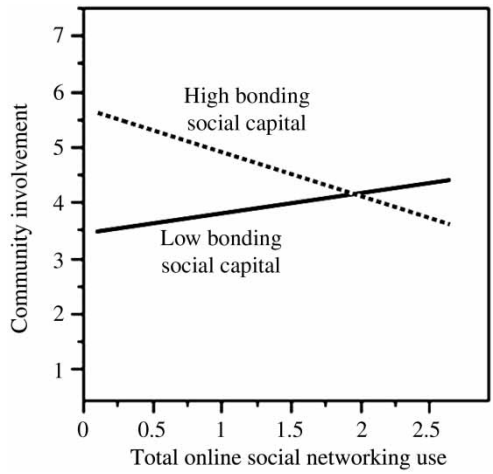

FIGURE 1 Graph of interaction between total social networking use and bonding social capital on community involvement.

that significantly predicted involvement, however, was the interaction term between total online social site use and bonding social capital, and this was a negative coefficient ($\beta = -0.23$, $p < 0.05$).

Figure 1 shows a graph of this interaction, revealing that those with lower bonding social capital had a positive association between their use of online social network sites and their involvement in the community, while those with higher bonding social capital on community involvement had a negative association between their use of social network sites and community involvement. There was no equivalent interaction with bridging social capital and online social networking.

To examine the research question, an analysis of variance was conducted and results showed that the type of Internet access was significantly related to community involvement, $F(2,198) = 4.16$, $p < 0.05$. Post hoc analyses indicated that the average community involvement was significantly higher for the rural youth with broadband access at home ($M = 5.01$, SD $= 1.13$) than for no access and dial up access combined ($M = 4.68$, SD $= 1.10$), $F(1, 198) = 7.57$, $p < 0.01$.

Discussion

In this study, we set out to clarify conflicting findings of the effects that the use of the Internet has on community involvement. In the process, we found support for both the displacement hypothesis as well as an augmentation effect. The dual processes suggest that merely looking at time spent on social networking

sites does not provide a complete picture of the effects of Internet use on community involvement. The nature of the interactions and the participants of online social networking play an important, and arguably more important, role in community involvement.

From the multiple regression, the use of social networking sites does have a significant negative effect on community involvement, controlling for the other variables. This supports the displacement hypothesis (Kraut *et al.* 2002), where the use of social networking sites may be detracting from the formation of meaningful ties that would affect community involvement. Time spent on the Internet is time taken away from face-to-face interactions in the local communities that might strengthen local ties and feelings of attachment.

However, the paper also found evidence to suggest that another mechanism affects the relationship between the use of social networking sites and community involvement. Results suggest that online social self efficacy, which bespeaks the capacity to accrue social capital in online interactions, is a significant predictor of community involvement. People who feel more self-efficacious online are likely to reach out to more people and have meaningful interactions with others. But who are these 'others' that rural users reach out to? Consistent with what Gilbert *et al.* (2008) found, results from this study indicated that rural users tend to contact people in their local community more than people outside. These interactions tend to be associated with bonding social capital which is in turn positively related to community involvement. The relationship between the use of online social networking and community involvement can thus be conceptualized as being mediated by online social self efficacy and bonding social capital. This is a particular usage pattern that is important to the longevity of rural communities. When rural users use online social networking to bond with significant others in their local community, their tendency to be involved in their home communities is enhanced.

Other factors that influence community involvement include the year in school and the quality of the Internet connection. The regression analysis shows that as students reach upper levels of high school, they become less involved with their community. This illustrates the problem that rural communities face and may be the initial symptom of bright flight.

The shape of the interaction in Figure 1 reveals that those with low-bonding social capital show increased community involvement with higher online social networking use, while those with high-bonding social capital show decreased community involvement with higher online social networking use. It may be that tightly bonded friends using online social networking are more likely to become disaffected with their communities, while those who are less well connected may find involvement increasing with greater use.

From the perspective of our intervention project, we were particularly interested in the relationships that bridging social capital had with online social networking and community involvement. We conceptualized bridging

social capital as the relationships that rural youth had with local career role models and one of the objectives of our intervention project was to encourage this interaction using an online social networking tool. As such, understanding the nature of the relationship that bridging social capital has with the other dependent variables will inform us on how better to implement the project.

From the data analysis, we found evidence to support the idea that creating opportunities for rural youth to interact with local leaders could increase their willingness to contribute to the local community. Specifically, we found a significant positive relationship between bridging social capital and community involvement. To recap, bridging social capital was conceptualized as the weak ties to leaders in the same community and community involvement was conceptualized as the willingness to engage in community activities. In other words, rural youth who have contacts in their home communities that can offer them opportunities to work or provide advice on their careers also tended to be more involved in their communities. This has important consequences from a rural development perspective. Based on the finding, encouraging the interaction between rural youth and their local leaders could then have positive implications for the long-term vitality of rural communities.

We also believe that the lack of a positive relationship between bridging social capital and the use of social networking sites should not detract from the implementation of the intervention project. In light of the unique Internet usage patterns of rural populations, the null finding is not anomalous. We know that rural users tend to have strong social ties in their online networks and hence, bridging social capital would not feature highly in their use of social networking sites prior to the implementation of the intervention project. In fact, what we hope to find after implementing the intervention project is an association between the use of online social networking and bridging social capital. In practical terms, we aim to create those online partnerships that link rural youth to professional role models in their communities. We hope that our efforts could expand career awareness in a way that could stem outmigration by creating additional social ties to home communities and by expanding awareness of future career opportunities in their locality.

As broadband projects are implemented in the nation, the use of online social networking is likely to become ubiquitous. We believe that our study has not only contributed a clearer understanding of the mechanisms of the social capital theory but also yielded findings that have implications for the practical implementation of broadband intervention projects. For researchers interested in the social capital theory, we found that the displacement and augmentation effects of Internet use may not actually be in conflict but can operate simultaneously and are dependent on the nature of the interaction. For rural community leaders and policy-makers, we found that social media such as social networking sites, instant messaging and email can be used as a means to enhance bridging social capital that will in turn increase community involvement.

Limitations

The generalizability of this study is limited by the use of youth whose schools are signed up with the research project. A random sample of rural communities and their youth would offer better generalizability for the findings on the use of social networking sites and community involvement. Further, this study only surveyed schools from the upper lower region of Michigan, and contextual differences may be reflected in other rural or for that matter, urban regions. Finally, measures of the frequency of online interaction with people within and outside the local community are single-item measures. Future research should use multi-item measures of online contact with others or perhaps the absolute number of contacts and the quality of interaction with them.

We acknowledge that the body of social capital literature includes other conceptualizations of the concept which may differ in other contexts (see Edwards & Foley 1997; van Oorschot *et al.* 2006, among others for reviews of the theory). However, we did not seek to integrate the different conceptualizations of the theory in this study. We believe that this endeavour will be better served by a separate study due to the vast nature of the literature available.

Future research

This study found a significant relationship between the use of social networking sites and community involvement that is mediated by online social self-efficacy and bonding social capital. However, future research should examine the nature of this relationship. The converse is just as likely. Perhaps youth who are already heavily involved in their local communities would be more predisposed to use social networking sites to reach out to others. As such, future research should focus on establishing the causal model of this relationship. Time-series studies or field experiments to test the above relationships are recommended.

Conclusions

In trying to address the practical problem of bright flight, we looked to the concept of the social capital theory as a theoretical framework for understanding how community attachment is affected by Internet use. But, the social capital theory was not without its own ambiguities and we also tried to make sense of the mixed findings uncovered by previous studies. We believe that the relations uncovered in the study have both theoretical and practical implications.

Social scientists need to understand that mere time spent on the Internet do not predict outcomes. The nature of the interaction and knowing the people who are involved in interacting is perhaps more important. Finally, rural community

leaders seeking to retain the vitality of their hometowns would do well to consider using online social networking sites to augment the involvement that youth have in their home communities.

As broadband infrastructural projects dot the nation and access to high-speed Internet becomes more common, we believe that the relations uncovered in the study will become more pronounced. Understanding the theoretical and practical implications of the use of online social networking is thus likely to become a vitally important issue for both social scientists and policy-makers.

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Appendix. Survey items and reliabilities

Index	*Questionnaire items*	*Scoring*	*Alpha*
Community involvement	I would be willing to help out there after I graduate I am willing to spend time to support activities there I spend a lot of time participating in activities there	7 = strongly agree	0.70
Online social self efficacy	Make new friends Make contacts with local business people Get help with my personal problems Find social support	7 = strongly agree	0.88
Bonding social capital	I have a special person who is a real source of comfort to me My friends really try to help me I can count on my friends when things go wrong I have friends with whom I can share my joys and sorrows There is a special person in my life who cares about my feelings I can talk about my problems with my friends	7 = strongly agree	0.86
Bridging social capital	I know someone there who would ask me to volunteer for a community project they are running I know someone there who would give me sound advice about my career options I know someone there who would advise me about volunteer activities	7 = strongly agree	0.73
Frequency of contact with people from inside the local community	Including email, instant messaging and social networking sites like Facebook, how often do you contact people from inside your local community online?	5 = one or more times a day	
Frequency of contact with people from outside the local community	Including email, instant messaging and social networking sites like Facebook, how often do you contact people from outside your local community online?		