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Internet use and sense of community among rural adolescents

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INTERNET USE AND SENSE OF COMMUNITY AMONG RURAL ADOLESCENTS

BY

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THESIS

Submitted to the University of New Hampshire
in Partial Fulfillment of
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in
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This thesis has been examined and approved.

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# TABLE OF CONTENTS

DEDICATION........................................................................................................................................iv  
ACKNOWLEDGEMENTS..............................................................................................................................v  
LIST OF TABLES ........................................................................................................................................vi  
LIST OF FIGURES .......................................................................................................................................vii  
ABSTRACT .................................................................................................................................................viii  

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>SPECIFIC AIMS</td>
<td>1</td>
</tr>
<tr>
<td>I. BACKGROUND AND SIGNIFICANCE</td>
<td>7</td>
</tr>
<tr>
<td>CONCEPTUALIZATION AND RELEVANCE OF SENSE OF COMMUNITY</td>
<td>7</td>
</tr>
<tr>
<td>THE INTERNET AND DIGITAL DIVIDE (RATIONALE)</td>
<td>8</td>
</tr>
<tr>
<td>THE COMMUNITY DEBATE</td>
<td>11</td>
</tr>
<tr>
<td>II. RECENT RESEARCH</td>
<td>17</td>
</tr>
<tr>
<td>INTERNET USE AND COMMUNITY OUTCOMES</td>
<td>17</td>
</tr>
<tr>
<td>RURAL ADOLESCENTS AND SENSE OF COMMUNITY</td>
<td>20</td>
</tr>
<tr>
<td>III. HYPOTHESES</td>
<td>23</td>
</tr>
<tr>
<td>INTERNET USE AND SENSE OF COMMUNITY OUTCOMES</td>
<td>23</td>
</tr>
<tr>
<td>SEX</td>
<td>23</td>
</tr>
<tr>
<td>IV. THE PRESENT STUDY</td>
<td>26</td>
</tr>
<tr>
<td>RESEARCH DESIGN</td>
<td>26</td>
</tr>
<tr>
<td>STUDY SITE</td>
<td>26</td>
</tr>
<tr>
<td>SAMPLE</td>
<td>27</td>
</tr>
<tr>
<td>DEPENDENT VARIABLE</td>
<td>30</td>
</tr>
<tr>
<td>INDEPENDENT VARIABLE</td>
<td>33</td>
</tr>
<tr>
<td>ANALYTIC STRATEGY</td>
<td>37</td>
</tr>
<tr>
<td>V. RESULTS</td>
<td>41</td>
</tr>
<tr>
<td>VI. CONCLUSION</td>
<td>52</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>52</td>
</tr>
<tr>
<td>LIMITATIONS</td>
<td>60</td>
</tr>
<tr>
<td>FUTURE RESEARCH</td>
<td>61</td>
</tr>
<tr>
<td>POSSIBLE APPLICATION</td>
<td>63</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>66</td>
</tr>
<tr>
<td>APPENDIX A: IRB APPROVAL</td>
<td>73</td>
</tr>
</tbody>
</table>
Dedication

To my family, whose love and support made this possible. To my husband, Drew, who never stopped believing I could accomplish this. And to my little ones, Madailein and David, who teach me more than I could ever learn in a classroom
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LIST OF TABLES
Table 1: Sample Demographics and Study Measures ...........................................28-29
Table 2: Factor Analysis of Sense of Community ..................................................31
Table 3: Means and Proportions of Sense of Community Measures .......................33
Table 4: Bivariate Correlations between Sex and Independent Variable ..................36
Table 5: Bivariate Correlations between Independent and Dependent Variables ........39
Table 6: Effects of Control Variables on Sense of Community ..............................42
Table 7: Effects of Frequency of Use and Interaction of Frequency of Use and Sex on Sense of Community .................................................................44
Table 8: Effects of Type of Use on Sense of Community ........................................46
Table 9: Effects of Interaction of Type of Use and Sex on Sense of Community ........47
Table 10: Curvilinear Effects of Type of Internet Use on Sense of Community ..........49
LIST OF FIGURES

Figure 1: Causal Model ................................................................................................. 25

Figure 2: Analytic Strategy ............................................................................................ 40
ABSTRACT

INTERNET USE AND SENSE OF COMMUNITY AMONG RURAL ADOLESCENTS

by

Rebecca Benson

University of New Hampshire, September 2012

There is currently a debate about the way Internet use affects community outcomes. Some suggest positive effects while others propose negative effects. The current study seeks to add to this discussion by using two waves of data to examine how frequency and type of Internet use affect sense of community in a sample of rural youth. Competing hypotheses are posed—Internet use will increase sense of community and Internet use will decrease sense of community. Using data from the Rural Youth Study, results indicate mixed effects of Internet use on sense of community dimensions, community attachment, support and emotional connection with peers, satisfaction of needs and opportunity for involvement, and community participation. Therefore, partial support for each hypotheses is found as Internet use has both positive and negative effects on sense of community dimensions, while also having no effect. Interaction effects of sex are also studied with no significant findings.
INTRODUCTION

SPECIFIC AIMS

My thesis aims to understand the effects of frequency and type of Internet use, socio-recreational and informational, on sense of community among a sample of rural adolescents. In addition, I will be examining the effect sex may have on this relationship. By looking at the frequency and type of Internet use and the effects of sex, I seek to add to the current discussion surrounding Internet use and community related outcomes.

For the purposes of this thesis, sense of community refers to "a feeling that members have of belonging and being important to each other, and a shared faith that members' needs will be met by the commitment to be together" (McMillan and Chavis 1986: 9). My sense of community scale, comprised of four dimensions, is similar to the Sense of Community for Adolescents (SoC-A) (Cicognani et al. 2006). These dimensions are: support and emotional connection with peers, community attachment, satisfaction of needs and opportunity for involvement, and community participation.

Attachment to community has been shown to have many positive outcomes both for rural adolescents and the communities from which they come (Van Gundy et al. 2011; Chew et al. 2010). Therefore, understanding the determinants of community attachment is a worthy pursuit. In addition, research has shown that "how youth in Coös County spend their free time has implications for their development" (Sharp 2010:1) Sharp found links between out-of-school activity involvement and cigarette and tobacco, alcohol, and marijuana use. Understanding determinants of community attachment among rural youth may also shed light on determinants of adolescent participation in
community service and events, constructive activities that allow them opportunity to explore their identities in positive and meaningful ways and taking away from time that may be otherwise spent in destructive behaviors.

Internet use will be conceptualized and measured both in terms of frequency and type of use. “Type of use” will be a further breakdown from “frequency” as it will measure the time spent in the past month [daily, never, or sometimes] using the Internet for the designated categories. For the purposes of this thesis, to measure type of use, Internet use will be divided into two categories, socio-recreational and informational. Socio-recreational use refers to the use of the Internet for social interaction and entertainment purposes, such as the use of email and social networking sites. Informational use refers to the use of the Internet to access information for educational or personal interest purposes (i.e reading the news online).

Research has shown mixed findings of Internet use on community outcomes. Many of the differences in outcomes are in part due to demographic factors, as suggested by the Digital Divide Framework (Wilson et al. 2003; Cho et al. 2003). For instance, Internet use has been shown to vary along lines such as sex, age, geographic location, and socio-economic status. This study seeks to add to the discussion by focusing on a specific demographic in terms of geography and age. The research is based on data from the Rural Youth Study. The data were collected from 7th and 11th grade public high school students in Coös County, a northern New Hampshire county which is the most rural in the state (U.S. Census Bureau 2009).

Rural America is a particularly relevant focus for research on Internet effects as recently there has been a push to improve broadband Internet service, with the American
Recovery and Reinvestment Act of 2008 designating $7.2 billion to such a purpose (Chew et al. 2010). Focus has been paid to the economic benefits that may be derived from such access; however, little attention has been paid to other effects, including psycho-social, of such a plan. It is important that other effects aside from just developmental and economic be considered in the face of the expansion of the Internet to rural areas. Postman (1992) asserts that the effects of a new technology cannot be limited to one sphere of human activity. Technological change is neither additive nor subtractive, but instead, one significant change brings about total change (Technopoly 18). This study examines one area that may experience change—sense of community. This has great significance particularly in rural American communities which have traditionally been known for strong community ties (Crockett et al. 2000). The nature of social ties in communities has been a central theme among sociologists since the discipline’s founding, with much agreement that rural locales tend to have stronger social connectedness (Tonnies 1912; Simmel 1903).

As stated above, the findings concerning Internet use’s effects on community outcomes have been mixed. There is much debate over whether the Internet enhances or worsens community life and attachment. There are plausible arguments for both. I will study a specific rural adolescent sample’s Internet use and sense of community to further explore this issue. In doing so, I aim to answer the following research questions:

a) Is there an effect of frequency of Internet use on sense of community in a sample of rural adolescents, and if so, what is the nature of that effect?
b) Is there an effect of type of Internet use, whether socio-recreational or informational, on sense of community in a sample of rural adolescents, and if so, what is the nature of that effect?

c) Does sex affect the relationship between Internet use and sense of community?

My thesis focuses on a relatively unstudied population in regards to Internet use and community outcomes. To my knowledge, aside from a paper presented by Chew et al. (2010), no studies have examined Internet use and community outcomes among rural adolescents. Both Hamilton et al. (2008) and Crockett et al. (2000) have explained the importance of studying specific rural communities. There is no uniform rural way of life as rural communities differ due to geography, ethnicity, and various economic factors (Hamilton et al. 2008). According to Crockett et. al (2000) many rural settings “have not yet been studied adequately” (p. 44). By studying the effects of Internet use on sense of community on not only a sample of rural adolescents but adolescents from a specific rural region, this thesis makes an important contribution to the literature.

In addition, my thesis fills several critical gaps and addresses some of the research suggestions posed in the literature. My focus on Internet use and rural communities is pertinent to a question raised by Hampton and Wellman (2003) after studying the effects of Internet use on community outcomes in a suburban community. They asked how the Internet would affect communities comprised of those lacking in social, human, and financial capital. Would the same effects be found? By studying the most impoverished rural county in New Hampshire, I will be exploring communities lacking in many forms of capital.
Another critical gap that has been identified is the processes by which adolescents become more or less attached to living near family and in their home community as they transition to adulthood (Johnson et al. 2005). Sense of community both reflects and determines one’s commitment to his/her community. Understanding the Internet’s role in affecting sense of community will help to fill this gap raised by Johnson et al. (2005), a gap that is both theoretical and practical in nature. Out-migration of rural young is a significant problem for many rural communities with very real consequences, and Coös County is no exception.

Understanding the role that the Internet plays in an adolescent’s sense of community and subsequently commitment to his/her community has the potential to directly benefit Coös county, which lost 40% of its 20-29 year olds in the decade between 1990 and 2000, resulting in a population where 19% of the adult population is 65 or older at a time when national rates are at about 12% (Stracuzzi 2009; Colocousis 2008; American Community Survey 2009). As the young leave in search of opportunity and jobs, communities decline in vitality and face substantial strain due to the increasing needs of an aging population and a shrinking pool of younger workers to meet those needs (Stracuzzi 2009).

Many people are working to revitalize Coös County—to bring about economic growth, retain its young people, and attract new residents. The findings of my thesis will be able to contribute to this effort by determining the ways in which Internet use affects adolescents’ sense of community. A strong sense of community is reflective of strong social ties, an important factor in adolescents’ desire to remain in or return to their home communities. By studying the Internet’s effect on sense of community, this study will be
able to shed some light on some of the dynamics at play in the process of rural adolescents' plans to stay in or leave their communities.

In the following sections, I provide a background to my study as well as an overview of the research I plan to conduct. First, I begin with a conceptualization of sense of community and considerations surrounding the study of the Internet. I then discuss the significance of this research topic and situate it within the current discussion surrounding Internet use and community. Following, is a section outlining my methodology, presentation of my results and a discussion of the findings. I conclude by addressing limitations and suggesting ways which this research can both advance future studies and be practically applied.
Chapter I

Background and Significance

CONCEPTUALIZATION AND RELEVANCE OF SENSE OF COMMUNITY

For the purposes of my thesis, sense of community, an important term among community sociologists and psychologists, refers to “a feeling that members have of belonging and being important to each other, and a shared faith that members’ needs will be met by the commitment to be together” (McMillan and Chavis 1986:9). It refers to something that is extra-individual, that is produced by the interactions and connectedness of community members and demonstrated in their collective lives (Bess et al. 2002). For the purposes of this research, community refers to a geographically bounded place.

Such communities and the feelings generated from them have the potential to yield both individual and societal level benefits. Community involvement and participation are important for increasing neighborhood safety, information flow, and ability for collective action (Jacobs 1961). In addition, social capital derived from community yields practical and psychological benefits to individuals. Local ties allow for the ability to “borrow a cup of sugar” and find help in times of need (Wellman and Wortley 1990). In addition, research has demonstrated the positive effects that sense of community has on individual’s psychological well-being (Theodori 2001; Cutrona et al. 2000).

Research has specifically examined the ways in which community life in a geographically bounded place affects adolescents, finding it to yield many social
and psychological benefits. Albanesi et al. (2007) studied Italian adolescents and found sense of community to be a significant predictor of social well-being. Van Gundy et al. (2011), in their study of New Hampshire youth, found "that community attachment may be a crucial resource for the psychological well-being of rural youth" (324). Given the varying views concerning hopes and fears about the Internet's potential to help or harm community and the importance of community both at an individual and societal level, it is important that this relationship be examined through empirical research.

THE INTERNET AND DIGITAL DIVIDE (RATIONALE)

When conceptualizing Internet use, it is important to consider the ways in which Internet use varies across such things as age, gender, socio-economic status, and geographic location. The well documented phenomena of the "Digital Divide" highlights the ways such factors explain variations in Internet access and use. The Digital Divide framework, therefore, suggests two things that make the design of this study particularly important. First, Internet access and Internet skills will be affected by residential location. Wilson et al. (2003) found "As in many other studies, rural residence, race, and gender significantly influenced whether respondents had a home computer and home Internet access" (p. 140). Secondly, Internet access and Internet skills will vary by age (Cho et al. 2003). This study is able to hold age and residential location constant to minimize confounding effects of the Digital Divide.

Age. Research findings have been consistent regarding differences in Internet use along the factors suggested by the Digital Divide. Generational differences are particularly noticeable in the way Internet is used and understood. Valentine and Holloway (2001:392) studied the ways rural parents in England hoped their children
would use the Internet and the ways that the Internet was actually used by children finding, "In contrast to this adultist, macro and future orientated vision of ICT (Internet Communication Technology), these technologies actually appear to emerge for children in practice in more everyday and mundane ways."

Two studies focusing on generational differences in Internet use yielded significant results. McMillan and Morrison (2006) found in their study that "participants described clear differences in the way their generation used technologies compared to the generations of their parents and grandparents" (p. 88). Shah et al. (2001) examined generational effects finding age cohorts to prefer whichever medium served as their initial window to the world (p. 155). For Generation X the most influential medium was the Internet, while for the Baby Boomers TV was most important, and for the Civic Generation it was the newspaper. These findings confirm the presence of cohort effects that must be accounted for when examining the Internet. By studying strictly adolescents, I will be able to isolate the sample from such effects.

**Sex.** Research shows that a person’s sex may affect Internet use in various ways (e.g. access, frequency of use, and type of use). While Gross’s (2004) study of adolescents in California public schools reveals that Internet use among boys and girls share more similarities than differences, other research shows that females tend to use the Internet for more communicative and social purposes than males, who show more of a tendency to use the Internet for entertainment purposes (Weiser 2000). The potential for sex differences in type of use is an important consideration when analyzing the relationship between Internet use and sense of community. For this reason, my thesis will control for sex as well as test for moderating effects by sex.
**Geographic Location.** The Digital Divide framework highlights the importance of geographic location when studying Internet use. Research has found Internet use to vary by geographic location, particularly between rural and urban communities. Zillien and Hargittai (2009) found that usage varies significantly by social status. Gilbert et al. (2008) studied rural and urban patterns of social networking site use and found rural users’ online friends to be fewer and closer to home than urban users’ online friends.

Ignoring the importance of geographic location may lead to the creation of a one size fits all approach, which denies the importance of locality and place, the individuality of communities. To not study Internet use by locality, is to overlook a fundamental fact of community life—that is that it varies by community. Wendell Barry, a poet and novelist, expressed the importance of place in a convocation address at Duke Divinity School. He stated that physical place in all its significance must the measure by which we understand development, technology, education, and modernization. Without an understanding of place, we will not know what to make of these things and their effects.

This importance of place informs my research questions as I examine the effects of Internet use on place-based communities. In addition, my thesis upholds the importance of place by examining one specific location in order to understand a facet of Internet use as it relates to sense of community among rural adolescents. In this way, this study hopes to contribute to the discussion of “what to make of technology.”

As stated above, rural America is a particularly salient focus at present as much attention has been given recently to improving broadband Internet service in rural areas with hopes of benefiting these communities developmentally and economically (Malecki 2003). The American Recovery and Reinvestment Act of 2009 designated $7.2 billion to
such a purpose (Chew et al. 2010). Many see the potential of the Internet to “level the playing field” and greatly benefit rural economies (Chew 2010; Malecki 2003). Others fear the potential for a continued digital divide in which the “rich get richer” due to the ever-changing technological sphere. Those with social capital derived from technological capabilities will be ready to adapt to new changes faster and hence accumulate more capital, further compounding the divide.

The Internet’s potential to bring about such change has elicited both concern and excitement. The varying views surrounding the Internet and community life has raised a debate about the nature of this modern phenomenon. Some are hopeful of the social and communal advances it will bring; others fear the impact it may have on such things. Interesting points have been made and questions raised, which have contributed to a scholarly debate on the matter.

THE COMMUNITY DEBATE

Since sociology’s conception, sociologists have taken up the question of community. Durkheim, Tonnies, and Weber all documented the shifts they witnessed in communal life around the time of the Industrial Revolution, a time of immense change. The modern era is again a time of immense change as the very fabric of daily life is changing Anthony Giddens (1991) describes the nature of this change in his work, Modernity and Self-Identity:

Modern social life is characterized by profound processes of the reorganization of time and space, coupled to the expansion of disembedding mechanisms—mechanisms which pry social relations free from the hold of specific locales, recombining them across wide time-space distances. The reorganization of time and space, plus the disembedding mechanisms, radicalize and globalize pre-established institutional traits of modernity; and they act to transform the content and nature of day-to-day social life (p. 2).
Modernity, as Giddens suggests, is marked by a transcendence of time and space, largely due to Internet technology capabilities. Due to this and its ubiquity and growth, the Internet has "reopened the community question" (Hampton and Wellman 2003: 279). There are essentially three views of how the Internet affects community. Each understands community and Internet use differently, with the latter two views corresponding to technological determinism and social determinism views on the Internet respectively. I will refer to them as a.) community liberated b.) community weakened c.) community enhanced. ¹

Many are hopeful of the Internet's capacity to bring about a sense of "community liberated" by transcending time and space to connect people and provide them with more choice in associations (Rheingold 1993). In this view, community is not understood in terms of place; in fact to view it as such is confining and restrictive. The Internet frees communal ties from geographic location, which some argue makes social connections stronger and richer. Such terms as "networked individualism" and "community without propinquity" have been used to describe this trend towards communities that are not necessarily place based (Wellman et al. 2002).

In contrast, there are those who argue the Internet will weaken community. They view community as fundamentally place-based. The Internet has raised similar concerns over isolation and noncommunal domestic privatism that have been raised with other technologies in the past (Oldenburg 1989; Jacobs 1961; Putnam 2000). In this view, the Internet has the potential to threaten community in several ways. Some fear that the Internet will pull people from civic and social life and isolate them in front of their

¹ The categorization of these views, though developed distinctly, is similar to Barry Wellman's categorization in his article "The Networked Nature of Community: Online and Offline."
computer screen. Such a changing of the locus of social ties from the local community to
a virtual source will naturally weaken local community ties. In addition, the Internet will
change the nature of human interaction in a way that will affect individual’s capacity for
and strength of social ties in general.

Such skeptics of the Internet tend to hold a technological deterministic viewpoint,
suggesting the technology determines the outcomes (Bargh and McKenna 2004). For
example, Nie and Erbring (2000) suggest the time displacement theory, which states that
time on the Internet will naturally take away time from other activities, most concernedly
social interactions with family, friends, and community. Another example of the
technological deterministic view is the concern over what is lost in screen mediated
interactions, such as facial expressions, gestures, and tone of voice and the subsequent
impact on social interactions. Sproull and Kiesler (1985) addressed the way in which
computer mediated communication (CMC) would lead to greater feelings of anonymity
and weaken human interactions.

The technological determinism view predicts that Internet use will decrease sense
of community for several reasons. Because time spent using the Internet is at the expense
of time spent in social interaction with family and other community members according
to the time displacement theory, community participation and support and emotional
connection with peers will decrease. Less time in spent in these activities will naturally
affect community attachment. In addition, Internet users will not only experience
diminished offline social interaction, they will experience a diminished ability for human
connection due to the anonymity and isolation produced through Internet communication.
If this is the case, decreased sense of community will be particularly evident when
measuring socio-recreational use of the Internet (e.g. email, instant messaging, and social networking).

Lastly, there are those who view the Internet as an enhancement to community. In this view community can refer to both online and offline groups. They tend to hold a social deterministic view, suggesting the user and his/her characteristics and goals determine the outcomes (Bargh and McKenna 2004; Dutta-Bergman 2006). The Internet then is mainly a tool, neutral in its effect, until the user chooses the purposes for which it will be used. For instance, Dutta Bergman (2006) suggests that those who are interested in their local community will use the Internet in ways that serve that interest. Some researchers are hopeful of the opportunities the Internet will provide for communication and voluntary participation (Stern and Adams 2010; Wellman 2001a).

Hampton and Wellman (2003) documented such an effect in their participant observation of a suburban neighborhood. “Netville” as they referred to this neighborhood had access to high-speed network and ancillary services, which included a neighborhood email list. As residents connected and communicated with other residents online, Hampton and Wellman (2003) noted ways that offline community life was enhanced. For instance, residents set out chairs on their small front stoops as opposed to their spacious porches out back, thus allowing for interaction with neighbors passing by. Furthermore, the email list served as a tool to engage residents in ways that lead to effective collective action against developers.

My thesis focuses on a sample of adolescents from a rural New Hampshire county. In light of the social deterministic view, what are the goals and motives that would shape their use of the Internet? The ways in which adolescents, and rural
adolescents in particular, use the Internet can shed light on their particular goals and motives. Adolescents are the largest population of Internet consumers, particularly for communication purposes (Subrahmanyam and Lin 2007). Gross et al. (2004) studied adolescents’ Internet communication and found that in general adolescents, whether male or female, report that online interaction occurs mainly in the form of email and instant messages with friends who they interact with offline. In addition, “on-line communication was reported to be mainly devoted to ordinary yet intimate topics (e.g., friends, gossip) and motivated by a desire for companionship” (p 86).

When studying rural social networking site users specifically, Gilbert et al. (2008) found that, in comparison to urban users, they tend to have fewer online friends, and their online friends tend to be people with whom they first established an offline relationship. In other words, urban users demonstrate more readiness to meet people and articulate friendships online than do their rural counterparts who generally use social networking as an extension of offline friendships. Chew et al.’s (2010) study confirmed this finding. One explanation for this is that rural adolescents are using the Internet to overcome the distance that separates them from others within their own communities.

If this is the case, Internet use may be motivated by the desire to connect with members of their local community who may be too far away to see in person due to the rural setting. Therefore, according to a social determinist view, we would expect that increased Internet use, particularly socio-recreational use, would increase sense of community, and that this would be most notably reflected in the dimension of support and emotional connection with peers.
Are we seeing a decrease in ties to local communities in the face of increased Internet use and the transcendence of time and space? Does time on the Internet and type of Internet use affect ties to local communities? Several theories are proposed, each falling in one of the three categories: community liberated, community weakened, community enhanced, but relatively little empirical research has been conducted, and of the research conducted, the findings are inconsistent. The following section highlights this empirical research and the varying findings surrounding Internet use and community outcomes.
Chapter II

Recent Research

INTERNET USE AND COMMUNITY OUTCOMES

The research conducted on Internet use and community outcomes ranges in its findings and its foci. Various types of communities have been studied and various measures and approaches have been used. Wellman et al. (2001) found that Internet use increases community involvement, which they measured by participation in voluntary organizations and politics. Katz and Rice (2001) conducted a longitudinal trend study collecting data in four waves between 1995 and 2000. They found that Internet users were more likely to engage in political activity. While they did look at length of time of Internet use, it is not clear in their article how they measured this, nor was there a clear explanation of how they measured and categorized Internet use. My research will seek to rectify the ambiguity and lack of specificity all too prevalent in research regarding Internet use and various outcomes by measuring Internet use in two ways—frequency and type—and basing my sense of community scale on the well-researched Sense of Community for Adolescents (SoC-A) scale (Cicognani et al. 2006) (See below).

Shah et al. (2001) divided Internet use into two categories, informational and social-recreational, and found that the former is positively related to civic engagement, interpersonal trust, and contentment, while the latter is most notably negatively related to interpersonal trust and contentment. They suggest that the use of the Internet for social entertainment purposes that are anonymous in nature,
such as chat rooms and gaming, leads “recreation and socializing to become privatized while the illusion of social interaction is maintained” (p. 154).\textsuperscript{2} Though Shah et al. (2001) draw on a social determinism view for their analyses, I believe this conclusion reflects a technological determinism view, that when applied to my thesis, suggests that respondents’ socio-recreational use of the Internet will predict a decrease in sense of community.

Kraut et al. (2000) in a follow up study to their HomeNet study (1998) attempted to understand time and type of Internet use by measuring hours online, email volume, and Web sites per week. They found that increased Internet use was related to decline in such community outcomes as knowledge about and commitment to live in their community about (p. 69). This finding, they suggested, was due to the abundance of information and access to relationships outside of the local area that the Internet provided. However, in a follow-up study Kraut et al. (2002), found that negative effects on existing relationships diminished. The researchers suggested that changes in the effects may be due to the fact that more of the friends and family of those studied in 1998 were Internet users by the time of the second study. My research is being conducted at a time when 77.3% of the American population uses the Internet; therefore, effects that may have been caused by limited number of users and first time exposure to the Internet should not be present in this study (http://www.Internetworldstats.com/am/us.htm).

\textsuperscript{2} Although they share the same designations, my type of Internet use measures differs slightly from those used by Shah et al. (2001). I consider email use a socio-recreational type of use whereas Shah et al. (2001) consider it to be an informational type of use. My focus on an adolescent population is the main reason for this difference. For adults, email is often a central part of their work lives; however, for adolescents email and other forms of internet communication, are often a central part of their social lives. In addition, my socio-recreational measure does not specifically refer to anonymous social interaction, but all types of online social interaction. However, I suggest that, Shah et al.'s (2001) conclusion holds regardless of whether the social interaction is anonymous or not.
As noted above, Hampton and Wellman (2003), using both participant observation and survey methodology, studied a suburban community and concluded that Internet neither weakens nor transforms community, but rather enhances it. They concluded their article with the question: what will the Internet do for communities comprised of those lacking in social, human, and financial capital? Would the same effects be found? Other studies have looked at rural communities, often a proxy for socio-economic status, which typically lack the amounts of capital present in such communities as “Netville”, and the results have been conflicting.

Stern and Dillman (2006) conducted a random sample among households in the rural region of the United States and concluded that the Internet enhanced communities. Measuring Internet usage based on access and frequency of use, they found Internet use to be related to nominal and active levels of community participation. They found this relationship to exist even when controlling for education and income, things associated both with higher participation and higher Internet use. Stern and Adams (2010) found support for the Internet, particularly email, as a facilitator of community. They studied a rural region of the western United States and found that residents there were most likely to use email to connect and maintain ties with those outside of their local communities, but that those who used email in this way were also more likely to use email to connect with people in the local community.

In contrast, Wilkinson’s (2010) study of rural Canadian communities yielded different results. He gathered data from 27 communities and found community cohesion had an effect on local emailing behavior. Contrary to Netville, Wilkinson (2010) found that community cohesion led to more local emailing as opposed to emailing as a way to
initiate and create cohesion as was the case in Netville. Still, in both cases, the results indicated that the Internet was used as a tool to enhance community. My thesis will be able to shed further insight on the questions posed by Hampton and Wellman (2003) regarding communities with lower capital, as it is conducted in a county that at 10.2 percent has the highest poverty rate in New Hampshire (American Community Survey 2004).

RURAL ADOLESCENTS AND SENSE OF COMMUNITY

What is the state of rural adolescent’s sense of community? In what ways may Internet fit into this? Piecing together various research studies can provide a glimpse into rural adolescent’s sense of community as defined and operationalized in this study. By understanding the way rural adolescents experience community, a picture, albeit a complicated one, of how the Internet may fit into this experience emerges.

Several studies have shown the close-knit ties and connectedness that characterize the rural adolescent experience of community life. Hedlund (1993) conducted semi-structured interviews among rural adolescents in upstate New York and found that many respondents reported the connectedness they felt in a small community. It was a common theme in their discussion of their communities. This is consistent with other findings which have led to the characterization of rural communities as “places of dense social networks and strong community ties” (Crockett et al. 2000:50). A factor in this connectedness may be increased opportunities for involvement.

Crockett et al. (2000) suggest that the low population densities that characterize rural communities may create more opportunities to be involved and connected in their communities due to a large number of roles and fewer people to fill them.
Dense social networks, homogeneity, and smaller populations of rural communities may increase the integration of adolescents into the community and also the consistency of socialization pressures, contributing to a sense of social responsibility and security (p. 50).

This suggests that a high level of satisfaction of needs and opportunities for involvement exists in rural communities. Is time on the Internet affecting the time spent in community participation, or does it perhaps become another vehicle for learning of and filling roles in the community? My thesis will begin to answer these questions by determining the direction and strength of a relationship between Internet use and sense of community.

Other studies suggest a negative impact of rural life on satisfaction of needs and opportunity for involvement. Valentine and Holloway (2001) propose that while rural life is often viewed as any idyllic place to raise children, studies are showing that young people view it as a place with nothing to do. Hedlund's (1993) interviews also revealed a sense of isolation, often arising from “difficulty with transportation, few social activities or cultural events, and lack of exposure to differing cultural or ethnic viewpoints” (p. 154). Dooris et al. (2007) similarly suggested the transcendence of physical boundaries made possible by the Internet may be particularly useful for rural adolescents' development of social networks and attainment of emotional support. However, when compared to urban adolescents, Dooris et al. (2007) found that rural adolescents used the Internet less to overcome environmental constraints on emotional support.

Does the Internet provide a way to overcome the isolation and thus contribute to a greater sense of community? Or does it perhaps fuel the belief that their communities are boring by exposing adolescents to outside information and opportunities? Understanding adolescent Internet use, how they view their community, and the degree to which it meets their needs and desire for belonging will shed some light on these questions.
Chew et al. (2010) studied the relationship between online social networking and actual involvement of rural youth in their communities, and “found support for both the ‘displacement hypothesis’ as well as an enhancement effect” (p.15). They looked at use of online social networking among rural youth and its effects on community involvement and found mediating factors in online social self-efficacy and bonding capital were crucial to understanding the outcomes. In their findings, higher online social self-efficacy lead to increased community involvement. Youth high in bonding social capital showed decreased community involvement as social networking use increased, while the opposite was true for youth low in bonding social capital. They suggest that social networking sites may afford those with low bonding capital more opportunities to become involved than those already high in bonding capital. In addition they found that while bridging social capital is not related to use of social networking sites, it is positively related to community involvement.

Stracuzzi (2009) found that social cohesion is high among adolescents living in Coös County. Most reported that they lived in a tightly knit community where people get along with one another. Understanding how the Internet affects a population who experience high level of sense of community is an important contribution of this study. Will Internet use increase this sense of community or will it disrupt the strong community cohesion experienced by rural adolescents? By examining Internet use’s effect on each dimension of sense of community, this thesis will be able to take an exploratory look at this question. A relationship and its direction must first be determined before we can begin to explore more intricately how Internet use affects rural adolescents.
Chapter III

Hypotheses

INTERNET USE AND SENSE OF COMMUNITY

Given the conflicting theories and findings, and the questions raised regarding the way Internet fits into rural adolescents’ experience of community, I propose competing hypotheses.

H1: The view of technological determinism predicts that increased Internet use will lead to decreased sense of community among the sample of rural adolescents.

H1b: The view of technological determinism predicts that socio-recreational and informational use of the Internet will lead to a decreased sense of community among the sample of rural adolescents and that this relationship will be stronger for socio-recreational use.

H2: The view of social determinism predicts that increased Internet use will increase sense of community among the sample of rural adolescents, as respondents may be using it to meet community oriented goals.

H2b: The view of social determinism predicts that socio-recreational use of the Internet will increase sense of community among the sample of rural adolescents, as research demonstrates they are using the Internet in ways that suggest interaction with community members (Gross et al. 2004; Gilbert et al. 2008; Chew et al. 2010).

SEX

Given the differences between sexes in Internet use (Weiser 2000) and the difference between sexes surrounding emotional and relational ties (Van Gundy et al.
2005; Van Gundy and Mills 2011), I suggest that the strength of the relationship, regardless of direction, between Internet use and sense of community will differ by sex, being stronger for females than for males.

Institutional and structural forces shape gender roles and attributes associated with such roles (Van Gundy et al. 2005). These roles and attributes are assumed by individuals throughout life, beginning as early as childhood. Such forces lead to expectations of women to be more skilled than men at developing and maintaining interpersonal relationships (Umberson et al. 1996). Wellman (2001b) suggests that women are the main suppliers of emotional support in community networks and bear the load of defining and maintaining their social ties as well as their husband’s. Personal attributes needed to fulfill these tasks such as sensitivity, nurturance and emotional expressiveness are considered “feminine” (Rosenfield 1999). These roles and attributes are related to community attachment, a concept relying heavily on emotional and social ties. Van Gundy and Mills (2011) found that females in Coös County were significantly more likely than their male counterparts to demonstrate community attachment by answering positively to the statement, “I care about my community.”

If the social determinist view is correct, Internet use will increase sense of community. The social deterministic view is based on the understanding that users have specific goals and gratifications they are seeking to fulfill. If females value relationships and social ties more highly than do males due to gender role orientation, they will be more likely to use the Internet more strategically to enhance such ties and achieve goals that coincide with a heightened sense of community. According to the social determinist
view, use of the Internet, particularly for social interaction, will increase sense of community.

In contrast, the technological determinist view predicts that Internet use will decrease sense of community. One vein of this view suggests that Internet communication diminishes people's capacity for offline social interactions and relations because of all that is lost in computer mediated communication and the feelings of anonymity that arise (Sproull and Kessler 1985). If females use the Internet more frequently for communicative purposes and social interactions, they will experience such effects more drastically which in turn will affect their sense of community. In addition, due to the importance females generally place on social ties and connection, they will display greater sensitivity to the effects of determinants on sense of community (Van Gundy and Mills 2011).

H3: The relationship, regardless of the direction, between Internet use, frequency and type, and sense of community will be stronger for females than for males.

The proposed relationship between Internet use, sense of community and sex is demonstrated in the following causal model.

Figure 1. Causal Model

Internet Use: Frequency Type

Sense of Community: Support and emotional connection with peers, community attachment, satisfaction of needs and opportunity for involvement.

Sex
Chapter IV

The Present Study

RESEARCH DESIGN

My thesis will draw on two complete years of data from the Rural Youth Study. It will use measures of Internet use from the 2008 survey and measures of sense of community from the 2009 survey in an attempt to better understand how Internet use may predict sense of community.

STUDY SITE

Coös County is the northernmost county in New Hampshire. It is the least populated county in the state and the most rural. Rich in natural resources and amenities, it is in a period of economic change as manufacturing, particularly pulp and paper mills, close. Coös County is at a crossroads as it seeks to recover from this economic downturn, with many emphasizing capitalization on its amenity rich location and prime tourist destination (Colocousis 2008). Coös County boasts part of White Mountain National Forest which includes Mount Washington among other beautiful attractions rich in recreational opportunities.

Due to its natural amenities and recreational opportunities, Coös County is seeing an in-migration of adults in their fifties (Colocousis 2008). However, the county has also seen chronic out-migration of its young. Between 1990-2000 the county lost 40% of residents 20-29, which contributed to the fact that there were more deaths than births between 1990-2006 (Colocousis, 2008). The respondents find themselves in both a very transient and crucial economic time in the history of their community.
SAMPLE

The sample includes self-reported information from 564 students who responded at both waves of data collection, first as seventh and eleventh grades in 2008 and then as eighth and twelfth graders one year later. This number represents an 86% follow-up response rate. Students were from all 16 schools in all five public school districts in Coös County. Parents were given the opportunity to deny consent for participation. Data were collected during class times and surveys were confidential. The sample was predominantly white, with 78.2% of respondents identifying as Caucasian. The sample was nearly equally comprised of males and females with males constituting 49.8% of the sample. Nearly half of the sample, 44.3%, was 11th graders at time 1. 52.8% of the sample’s parents were married at time 1. Of the respondents, 62.5% reported having some problems within the past month with accessing the Internet when they wanted to. Table 1 shows the breakdown of these characteristics based on number of respondents and percentages.
### Table 1. Sample Demographics and Study Measures

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>324</td>
<td>49.8</td>
</tr>
<tr>
<td>Female</td>
<td>327</td>
<td>50.2</td>
</tr>
<tr>
<td><strong>Grade Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>316</td>
<td>41</td>
</tr>
<tr>
<td>11th</td>
<td>341</td>
<td>44.3</td>
</tr>
<tr>
<td><strong>Parents' Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>344</td>
<td>52.8</td>
</tr>
<tr>
<td>Other</td>
<td>307</td>
<td>47.2</td>
</tr>
<tr>
<td><strong>SES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mother's Education Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Less than highschool</td>
<td>35</td>
<td>4.5</td>
</tr>
<tr>
<td>(b) High school</td>
<td>199</td>
<td>25.8</td>
</tr>
<tr>
<td>(c) Some college education</td>
<td>145</td>
<td>18.8</td>
</tr>
<tr>
<td>(d) Associate degree</td>
<td>85</td>
<td>11</td>
</tr>
<tr>
<td>(e) Bachelor's degree</td>
<td>140</td>
<td>18.2</td>
</tr>
<tr>
<td>(f) Graduate or professional school</td>
<td>32</td>
<td>4.2</td>
</tr>
<tr>
<td><strong>Father's Education Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Less than highschool</td>
<td>64</td>
<td>8.3</td>
</tr>
<tr>
<td>(b) High school</td>
<td>271</td>
<td>35.2</td>
</tr>
<tr>
<td>(c) Some college education</td>
<td>119</td>
<td>15.5</td>
</tr>
<tr>
<td>(d) Associate degree</td>
<td>46</td>
<td>6</td>
</tr>
<tr>
<td>(e) Bachelor's degree</td>
<td>86</td>
<td>11.2</td>
</tr>
<tr>
<td>(f) Graduate or professional school</td>
<td>24</td>
<td>3.1</td>
</tr>
<tr>
<td><strong>How Would You Rate Your Family?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0) Very little money available</td>
<td>52</td>
<td>6.8</td>
</tr>
<tr>
<td>(1)</td>
<td>94</td>
<td>12.2</td>
</tr>
<tr>
<td>(2)</td>
<td>296</td>
<td>38.4</td>
</tr>
<tr>
<td>(3)</td>
<td>166</td>
<td>21.6</td>
</tr>
<tr>
<td>(4) Lots of money available</td>
<td>37</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Internet Accessibility Problems in Last Month</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No problems accessing Internet</td>
<td>244</td>
<td>37.5</td>
</tr>
<tr>
<td>Problems accessing Internet</td>
<td>407</td>
<td>62.5</td>
</tr>
<tr>
<td><strong>I Feel Like I am part of My Community</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>81</td>
<td>10.5</td>
</tr>
<tr>
<td>Disagree</td>
<td>144</td>
<td>18.7</td>
</tr>
<tr>
<td>Agree</td>
<td>345</td>
<td>44.8</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>82</td>
<td>10.6</td>
</tr>
<tr>
<td><strong>Important to you to Leave this Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0) Not at all Important</td>
<td>77</td>
<td>10</td>
</tr>
<tr>
<td>(1)</td>
<td>51</td>
<td>6.6</td>
</tr>
</tbody>
</table>
As is the case in many rural areas, residents, particularly the young, are faced with the tension of community attachment and a desire to remain near family and a desire for educational and employment opportunities (Johnson et al. 2005). Such a picture emerges for this sample as half (51%) of the youth in the sample report they feel like they are a part of their community, and 53.6% said that it was important to live close to family. Still, 42.8% reported that it was important to leave the area. Perhaps this, in part, reflects a recognition that opportunities lay outside the county as respondents overwhelmingly placed great importance on future careers. When asked how important a successful career was, 86% of respondents reported that it was important. It is within this picture of a rural community, that I will examine the relationship between Internet use and sense of community.

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1 Questions asked “how important is it to you…” with response categories 0-6, 0 coded not at all and 6 coded very important. Percentages indicate those who responded a 4, 5 or 6.
DEPENDENT VARIABLE

The scale I use to measure sense of community is similar on the Sense of Community for Adolescents (SoC-A) scale. This scale was developed by Cicognani et al. (2006) to account for the unique ways in which adolescents experience community life. It includes five dimensions: satisfaction of needs and opportunities for involvement, support and emotional connection with peers, support and emotional connection in the community, sense of belonging, and opportunities for influence.

A principal component factor analysis with varimax rotation [See Table 2] of my measures reveals similar dimensions as SoC-A, with some variation. In my factor analysis, the measures intended for sense of belonging and support and emotional connection in the community, loaded heavily on one construct. This is not surprising as the two concepts are very closely related. For the purposes of this study, these two constructs will be condensed into one and referred to as community attachment. To define this dimension in a way that includes support and emotional connection as well as sense of belonging, this study relies on the conceptualization used by Van Gundy et al. (2011). Community attachment refers to “a sense that one resides among neighbors who share similar values and can be relied on for support” (p 297).”
Table 2. Factor Analysis of Sense of Community

<table>
<thead>
<tr>
<th>Community Attachment</th>
<th>Loadings</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>This is a close knit community</td>
<td>0.671</td>
<td>0.016</td>
<td>-0.008</td>
</tr>
<tr>
<td>People around here are willing to help their neighbors</td>
<td>0.753</td>
<td>0.029</td>
<td>0.076</td>
</tr>
<tr>
<td>People in this community can be trusted</td>
<td>0.721</td>
<td>-0.001</td>
<td>-0.086</td>
</tr>
<tr>
<td>My community has caring, friendly, and helpful people</td>
<td>0.758</td>
<td>0.009</td>
<td>-0.060</td>
</tr>
<tr>
<td>I feel like I am part of my community</td>
<td>0.666</td>
<td>0.265</td>
<td>-0.171</td>
</tr>
<tr>
<td>I am proud to present my community to people</td>
<td>0.678</td>
<td>0.240</td>
<td>-0.247</td>
</tr>
<tr>
<td>Support and Emotional Connect with Peers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kids my age invite me to do things with them</td>
<td>0.041</td>
<td>0.863</td>
<td>-0.012</td>
</tr>
<tr>
<td>Kids my age think I’m fun</td>
<td>0.038</td>
<td>0.809</td>
<td>0.030</td>
</tr>
<tr>
<td>I spend a lot of time with other kids on the weekend</td>
<td>0.031</td>
<td>0.790</td>
<td>0.058</td>
</tr>
<tr>
<td>I have a good group of friends in my community</td>
<td>0.348</td>
<td>0.512</td>
<td>-0.002</td>
</tr>
<tr>
<td>Satisfaction of Needs and Opportunity for Involvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is nothing to do here--it’s boring</td>
<td>-0.110</td>
<td>-0.022</td>
<td>0.778</td>
</tr>
<tr>
<td>The population is too small</td>
<td>-0.099</td>
<td>0.022</td>
<td>0.763</td>
</tr>
<tr>
<td>My community feels like it is cut off from other communities</td>
<td>-0.088</td>
<td>-0.001</td>
<td>0.697</td>
</tr>
<tr>
<td>There are not enough different kinds of shops or stores</td>
<td>0.027</td>
<td>0.067</td>
<td>0.750</td>
</tr>
</tbody>
</table>

Note: Presented are principal components varimax-rotated factor loadings constrained to 4 factors. Items in bold were used to create the measures of sense of community in the left column (community attachments, support and emotional connection with peers, satisfaction of needs and opportunity for involvement, community participation).

Response choices range from 0 “strongly disagree” to 3 “strongly agree” for all items.

Questions to measure opportunities for influence were not included in the survey used for this research; therefore, this dimension of SoC-A is not included in the analysis.

Instead, my scale includes the dimension, community participation, which is based on involvement in community events and groups. Albenesi et al. (2007) state the well-documented support they have for their “view that sense of community is a catalyst for community participation (p. 389).” Based on this well-established connection, this study uses community participation as an indicator of sense of community.

Community participation is also closely related to SoC-A’s dimension, opportunity for influence. Opportunity for influence refers to an adolescent’s attitude toward community member’s ability to change and improve their community. Chiessi et al. (2010) measure it with statements such as: “I think that people who live here could...
change things that are not properly working for the community.” Positive responses to such statements suggest a strong sense of self efficacy. Presumably, if someone views themselves and others as able to change and improve things through their activity, they will be more likely to participate in community life. Therefore, I use community participation in place of opportunity for influence.

A strength of this research design is its ability to measure sense of community both subjectively and objectively. That is, respondents are asked questions measuring their feelings towards their community, but also their actual levels of involvement in the community. This is based on the assumption that community involvement will result from a strong sense of community; thus, providing a way to measure an active manifestation of sense of community, not just feelings.

Sense of community is operationalized by the following four variables (see below). Participants may respond (0) strongly disagree (1) disagree (2) agree (3) strongly disagree to each of the statements. Categorization is based on the sum total of responses to the statements included for each dimension. For community participation which includes only binary items with yes or no responses, a dummy variable was created with 1 coded as any participation and 0 coded as no participation. Satisfaction of needs and opportunity for involvement is reverse coded for purposes of consistency in interpreting results.

*Community Attachment.* This is a close-knit community; People around here are willing to help their neighbors; People in this community can be trusted; My community has caring, friendly, and helpful people; I feel like I am part of my community; I am proud to present my community to people.
Support and Emotional Connection with Peers. Kids my age invite me to do things with them; Kids my age think I’m fun; I spend a lot of time with other kids on weekends; I have a good group of friends in my community.

Satisfaction of Needs and Opportunity for Involvement. There is nothing to do here—it’s boring; The population is too small; My community feels like it is cut off from other communities; There are not enough different kinds of shops or stores.

Community Participation. In the past 12 months, I’ve participated in: 4-H or scouts; Community service club(s); Community events (like fair, live music, or suppers); Community center events (like teen centers or the YMCA).

Table 3. Means and Proportions of SoC-A Measures

<table>
<thead>
<tr>
<th></th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Attachment</td>
<td>0</td>
<td>18</td>
<td>10.13</td>
</tr>
<tr>
<td>Satisfaction of Needs and Opportunity for Involvement</td>
<td>0</td>
<td>12</td>
<td>4.4</td>
</tr>
<tr>
<td>Support and Emotional Connection with Peers</td>
<td>0</td>
<td>12</td>
<td>8.39</td>
</tr>
<tr>
<td>Community Participation</td>
<td>0</td>
<td>1</td>
<td>0.065</td>
</tr>
</tbody>
</table>

INDEPENDENT VARIABLES

For the purposes of this thesis, Internet use will be measured in two ways. First it will be measured strictly in terms of frequency, regardless of type of use. Then it will be measured in terms of frequency of type of use, socio-recreational and informational. Shah et al. (2001) critique the research that regards the Internet “as an amorphous whole, neglecting the fact that individuals make very different uses of this emerging medium” (p. 142).

Research that has delineated between types of Internet use has yielded significant results. Studies separating communicative and non-communicative activity have found different effects of Internet use on depression (Morgen and Cotton 2003; Selhout et. al
Shah et al. (2001) divided Internet use into two categories, informational and social-recreational, and found that the former is positively related to civic engagement, interpersonal trust, and contentment while the latter is most notably negatively related to interpersonal trust and contentment.

Still, there is no agreed upon way to best study Internet use. Its ubiquity, its fluidity among uses, and its ever changing nature, complicate its measurement. As Stepanikova et al. (2010) suggest, how Internet use is measured may impact the relationship observed between Internet use and psychological outcomes. They propose that more research is needed regarding measurement effects before we can really understand how the Internet affects daily life. By measuring Internet use in two ways and noting any differences in outcomes, my thesis will be able to contribute to the knowledge surrounding how best to measure Internet use.

**Frequency of Internet Use.** To create my measure of frequency of Internet use, I draw on the following items. In the last month, how often have you used the Internet at home? (0) never in the last month (1) once or twice (2) at least once a week (3) at least once a day. In the last month, how often have you used the Internet at school? (0) never in the last month (1) once or twice (2) at least once a week (3) at least once a day. Frequency of Internet use will be measured by a series of dummy variables. Those who use the Internet daily, whether at school or home or both, will be represented by a dummy variable with 1 coded for daily use and 0 coded for other. Those who never use the Internet will be represented by a dummy variable with 1 coded for never and 0 coded for other. The category "sometimes" will include those who responded "once or twice" or "at least once a week," with 1 coded for sometimes and 0 coded for other.
regressions will include the dummy variables “never” and “sometimes” in order to understand how these respondents compare to those who reported using the Internet daily.

Type of Internet Use. To distinguish between frequencies of type of use, I summed respondents scores to the following sets of items.

Socio-recreational. In the last month, how often have you checked your email? (0) never in the last month (1) once or twice (2) at least once a week (3) at least once a day
In the last month, how often have you used instant messaging? (0) never in the last month (1) once or twice (2) at least once a week (3) at least once a day
In the last month, how often have you used chat rooms on the Internet? (0) never in the last month (1) once or twice (2) at least once a week (3) at least once a day
In the last month, how often have you used Internet networking sites (myspace, facebooks, etc.)? (0) never in the last month (1) once or twice (2) at least once a week (3) at least once a day

Informational. In the last month, how often have your read news on the Internet? (0) never in the last month (1) once or twice (2) at least once a week (3) at least once a day
In the last month how often have you used the Internet for homework or educational purposes? (0) never in the last month (1) once or twice (2) at least once a week (3) at least once a day.

Moderating Variables. Sex is a dummy variable 1 coded for female and 0 coded for male. Bivariate correlations between sex and frequency and type of Internet use
suggest that sex is correlated with Internet use. Specifically in this sample (See Table 4), females are significantly more likely than males to use the Internet both for socio-recreational and informational use and males are significantly more likely to never use the Internet compared to females. The relationship between sex and daily use of the Internet nearly reaches significance, suggesting that females are more likely than males to use the Internet daily.

Table 4. Bivariate Correlations between Sex and Independent Variables

<table>
<thead>
<tr>
<th>Type of Use</th>
<th>Frequency of Use</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Info.</td>
<td>Socio-Rec</td>
<td>Daily</td>
<td>Sometimes</td>
</tr>
<tr>
<td>Sex (Female=1)</td>
<td>.135**</td>
<td>.118*</td>
<td>.071**</td>
<td>.0285</td>
</tr>
</tbody>
</table>
* p < 0.05; ** p < 0.01; *** p < 0.001

Control Variables. Demographic variables that serve as controls in my analyses are the respondent’s grade level, sex, parent’s marital status, and socio-economic-status. Each of these variables have been shown to have varying degrees of impact on the independent and/or dependent variable (Wilson et al. 2003; Cho et al. 2003; Johnson et al. 2005, Chew et al. 2010). Sex is a dummy variable 0 coded for male and 1 coded for female. To denote grade level 0 is coded as 7th grade and 1 is coded as 11th grade. Parent’s marital status is dummy variable with 1 coded for married and 0 coded for other. SES is a composite measure of parents’ education attainment (1, “less than high school to 6, “graduate or professional degree”) and respondents’ responses to an item asking them to rate their family’s financial situation from 1, “very little money available,” to 5, “lots of money available.” I standardize the items, sum them together, and then restandardize them to form composite SES measure (Van Gundy et al. 2011). Internet accessibility is a dummy variable with 0 coded for trouble and 1 coded for no trouble.

4No measures of gaming or “surfing” were available. Had such types of use been measured, further delineation between female and male Internet use may have been seen as males are more likely to use the Internet for such ends (Weiser 2000).
ANALYTIC STRATEGY

As Table 5 shows, there are a number of statistically significant relationships between Internet use and sense of community measures before an application of statistical controls. The correlations lend partial support to both hypotheses. Internet use displays both positive and negative effects on some community outcomes, while showing no effect on others. Frequency of use appears to have some correlation with sense of community measures. Daily Internet use is positively correlated with support and emotional connection with peers and negatively correlated with satisfaction of needs and opportunity for involvement, while weekly/monthly Internet use is positively correlated with satisfaction of needs and opportunity for involvement. No Internet use is negatively correlated with community participation.\(^5\)

---

\(^5\) Additional analyses will be run to test for U-shape effects of Internet use.
Type of use also shows some significant correlation with sense of community measures, again lending partial support to both hypotheses. While informational use is positively correlated with community attachment, support and emotional connection with peers, and community participation, it is negatively correlated with satisfaction of needs and opportunity for involvement. Socio-recreational use likewise is negatively correlated with satisfaction of needs and opportunity for involvement and positively correlated with support and emotional connection with peers and community participation.

To further explore these relationships, I use multivariate analyses using ordinary least squares regression estimates for all analyses except those including community participation. For the analyses that include community participation, I employ logistic regression. I conduct a series of analyses that regress each dimension of sense of community on social statuses, frequency of Internet use, and type of Internet use. Moderating effects are tested by including interaction terms for sex and frequency of Internet use and sex and type of Internet use [See Figure 2].

---

6 I will conduct a few other separate analyses including controlling for sense of community at T1 and testing for possible U-shaped effect of Internet use on sense of community.
### Table 5. Bivariate Correlations between Independent and Dependent Variables

<table>
<thead>
<tr>
<th></th>
<th>CA</th>
<th>S</th>
<th>SP</th>
<th>CP</th>
<th>Daily (1=daily)</th>
<th>Sometimes (1=sometimes)</th>
<th>Never (1=no use)</th>
<th>Informational Use</th>
<th>Socio-recreational Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>1</td>
<td>.213**</td>
<td>.254**</td>
<td>.241**</td>
<td>-.00**</td>
<td>.023</td>
<td>-.046**</td>
<td>.131**</td>
<td>0.005</td>
</tr>
<tr>
<td>S</td>
<td>.213**</td>
<td>1</td>
<td>-.025</td>
<td>.009</td>
<td>-.104</td>
<td>.095</td>
<td>.03</td>
<td>-.110**</td>
<td>-.183**</td>
</tr>
<tr>
<td>SP</td>
<td>.254**</td>
<td>-.025</td>
<td>1</td>
<td>.161**</td>
<td>.103**</td>
<td>-.082</td>
<td>-.063</td>
<td>.114**</td>
<td>.193**</td>
</tr>
<tr>
<td>CP</td>
<td>.241**</td>
<td>.009</td>
<td>.161**</td>
<td>1</td>
<td>.061</td>
<td>-.026</td>
<td>-.098**</td>
<td>.1**</td>
<td>.056</td>
</tr>
<tr>
<td>Daily Use (1=daily)</td>
<td>-0.00**</td>
<td>-0.104**</td>
<td>.103**</td>
<td>.061</td>
<td>1</td>
<td>-.92**</td>
<td>-.255**</td>
<td>-.396**</td>
<td>.513**</td>
</tr>
<tr>
<td>Sometimes (1=sometimes)</td>
<td>.023</td>
<td>.096**</td>
<td>-.082</td>
<td>-.026</td>
<td>-.92**</td>
<td>1</td>
<td>-.12**</td>
<td>-.308**</td>
<td>-.426**</td>
</tr>
<tr>
<td>Never (1=no use)</td>
<td>-.046</td>
<td>.03</td>
<td>-.063</td>
<td>-.098**</td>
<td>-.255**</td>
<td>1</td>
<td>-.12**</td>
<td>-.251**</td>
<td>-.25**</td>
</tr>
<tr>
<td>Informational Use</td>
<td>.131**</td>
<td>-.110**</td>
<td>.114**</td>
<td>.1**</td>
<td>.396**</td>
<td>-.308**</td>
<td>-.251**</td>
<td>1</td>
<td>.416**</td>
</tr>
<tr>
<td>Socio-recreational Use</td>
<td>.005</td>
<td>.183**</td>
<td>.193**</td>
<td>.056</td>
<td>.513**</td>
<td>-.426**</td>
<td>-.25**</td>
<td>.416**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: CA = Community attachment, SP = Support and emotional connection with peers, S = Satisfaction of opportunity and need for involvement, CP = Community Participation. The table presents OLS regression coefficients predicting sense of community dimensions for CA, SP, and S, and presents odds ratios predicting CP.

*p < 0.08; * < 0.05; ** < 0.01; *** < 0.001
Figure 2. Analytic Strategy

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Grade</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Parental Marital Status</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>SES</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Internet Access</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Frequency of Internet Use</td>
<td>x</td>
<td>—</td>
<td>—</td>
<td>x</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Socio-recreational Use</td>
<td>—</td>
<td>x</td>
<td>—</td>
<td>—</td>
<td>x</td>
<td>—</td>
</tr>
<tr>
<td>Informational Use</td>
<td>—</td>
<td>—</td>
<td>x</td>
<td>—</td>
<td>—</td>
<td>x</td>
</tr>
<tr>
<td>Sex x Frequency of Internet Use</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>x</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Sex x Socio-recreational Use</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>x</td>
<td>—</td>
</tr>
<tr>
<td>Sex x Informational Use</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>x</td>
</tr>
</tbody>
</table>

SP=Support and emotional connection with peers, CA=community attachment, S=satisfaction of needs and opportunity for involvement, CP=community participation
Chapter V

Results

Table 6 shows that community attachment is higher among females, those whose parents are married, and those of higher SES. Support and emotional connection with peers is only shown to be higher among those of higher SES. Satisfaction of needs and opportunity for involvement are shown to be higher among males and those with no trouble accessing the Internet. In addition, 7th graders displayed higher levels of satisfaction than 11th graders. This is likely due to the fact that as students are aging they are outgrowing their surroundings, in many ways preparing to leave for educational and career opportunities. As stated above, it the plight of many rural communities to find ways to curb this “outgrowing” and retain or restore their young people.

Females were almost twice as likely as males to participate in community events, programs, and volunteer work. Those with higher SES were almost 1.5 times as likely to participate. When type and frequency of Internet use were introduced into the equations, nearly all of the above relationships remained significant with some showing some slight decrease in strength.
I examined whether frequency of Internet use [never in last month, sometimes in last month, or daily in last month] affects sense of community (See Table 7). Most of the relationships lack statistical significance, which suggests that frequency of Internet use does not have a strong effect overall on sense of community. The technological determinism view, specifically the time displacement theory, predicts that people who never use the Internet will be more likely to participate in community events than those who use it more frequently. However, the results show that those who never use the Internet are less likely to participate in community activities than those who use the Internet daily. Still, when looking at other dimensions, there is partial support for the technological determinism view as those who sometimes use the Internet display higher levels of satisfaction of needs and opportunity for involvement than those who use it daily.

Though not statistically significant at the .05 level, the difference in support and emotional connection with peers between those who sometimes use the Internet and those who use it daily approaches significance (p > .08). Those who use it sometimes show

<table>
<thead>
<tr>
<th></th>
<th>CA</th>
<th>SP</th>
<th>S</th>
<th>CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade level (11th=1)</td>
<td>0.427</td>
<td>-0.039</td>
<td>-1.046***</td>
<td>0.902</td>
</tr>
<tr>
<td>Sex (Female=1)</td>
<td>.629*</td>
<td>0.38</td>
<td>-0.919***</td>
<td>1.991**</td>
</tr>
<tr>
<td>Parents' Marital Status (Married=1)</td>
<td>.770*</td>
<td>0.2</td>
<td>0.202</td>
<td>1.166</td>
</tr>
<tr>
<td>SES</td>
<td>.548**</td>
<td>.398**</td>
<td>0.163</td>
<td>1.356**</td>
</tr>
<tr>
<td>Internet Access Trouble (No trouble =1)</td>
<td>-0.236</td>
<td>0.289</td>
<td>.554*</td>
<td>0.721</td>
</tr>
<tr>
<td>Constant</td>
<td>9.251</td>
<td>7.982</td>
<td>5.122</td>
<td>1.676</td>
</tr>
<tr>
<td>Adjusted/Pseudo R2</td>
<td>0.055</td>
<td>0.029</td>
<td>0.081</td>
<td>0.056</td>
</tr>
<tr>
<td>N</td>
<td>488</td>
<td>497</td>
<td>504</td>
<td>500</td>
</tr>
</tbody>
</table>

Note: CA=Community attachment, SP=support and emotional connection with peers; S=Satisfaction of opportunity and need for involvement; CP=Community Participation. The table presents OLS regression coefficients predicting sense of community dimensions for CA, SP, and S, and presents odds rations predicting CP.

*<0.05; ** <0.01; ***<0.001
lower levels of such support and connection with peers than those who use it daily as predicted by the social determinism view.

Interesting to note, is that there is no significant or near significant difference in support and emotional connection with peers between those who use the Internet daily and those who never use it. In this way, the findings differ from those predicted by the social determinism view.

I included an interaction term for frequency of use and sex in the model 2 in Table 7. This yielded no significant findings, suggesting in this sample that sex does not affect sense of community through its effect on frequency of use. That is to say, males' and females' frequency of use of the Internet does not explain differences in sense of community measures that exist between the sexes.
Table 7. Effects of Frequency of Use, and Interaction of Frequency of Use and Sex on Sense of Community

<table>
<thead>
<tr>
<th></th>
<th>Model (1)</th>
<th>Model (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CA</td>
<td>SP</td>
</tr>
<tr>
<td>Grade level (11th=1)</td>
<td>.420</td>
<td>-.084</td>
</tr>
<tr>
<td>Sex (Female=1)</td>
<td>.697**</td>
<td>.387</td>
</tr>
<tr>
<td>Parents Marital Status (married=1)</td>
<td>.04**</td>
<td>.207</td>
</tr>
<tr>
<td>SES</td>
<td>.592***</td>
<td>.38***</td>
</tr>
<tr>
<td>Internet Access Trouble (No trouble =1)</td>
<td>-1.19</td>
<td>.342</td>
</tr>
<tr>
<td>Sometimes (1=sometimes)</td>
<td>.342</td>
<td>-.437**</td>
</tr>
<tr>
<td>Never (1=no use)</td>
<td>.039</td>
<td>-.496</td>
</tr>
<tr>
<td>Sex*Sometimes</td>
<td>.783</td>
<td>-.002</td>
</tr>
<tr>
<td>Sex*Never</td>
<td>-.002</td>
<td>.822</td>
</tr>
<tr>
<td>Adjusted Pseudo R2</td>
<td>.055</td>
<td>.032</td>
</tr>
</tbody>
</table>

Note: CA = Community attachment; SP = support and emotional connection with peers; S = Satisfaction of opportunity and need for involvement; CP = Community Participation. The table presents OLS regression coefficients predicting sense of community dimensions for CA, SP, and S, and presents odds ratios predicting CP.

*p <0.08; * = 0.05; ** = 0.01; ***<0.001
Further dissecting Internet use, I examined the frequency of type of Internet use, delineating between informational and social-recreational use (See Table 8). Increased use of the Internet for informational purposes results in higher levels of community attachment, support and emotional connection with peers, and community participation as predicted by the social determinism view. While not significant, the effect of informational Internet use on satisfaction of needs and opportunity for involvement is negative.

Increased use of the Internet for socio-recreational purposes shows increased levels of support and emotional connection with peers as predicted by the social determinism view. However, it also is associated with decreased levels of satisfaction of needs and opportunity for involvement as predicted by the technological determinism view.

In addition, I tested for the presence of an interaction effect of sex and Internet use on sense of community dimensions (See Table 9). Results shown in model 1 of Table 9 indicate there is no significant effect on sense of community dimensions. One thing to note is that the relationship between satisfaction of needs and opportunity for involvement between both sex and socio-recreational use decreased in levels of significance when the interaction term was included. This suggests that sex does not affect sense of community through its effect on frequency of type of Internet use. Further exploration of why there is no significant effect of this interaction term may lend support to the increasing findings that male and female adolescents' Internet use does not differ as much as often expected (Gross et al. 2004).
Table 8. Effects of Type of Use on Sense of Community

<table>
<thead>
<tr>
<th></th>
<th>Model (1)</th>
<th></th>
<th></th>
<th>Model (2)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CA</td>
<td>SP</td>
<td>S</td>
<td>CA</td>
<td>SP</td>
</tr>
<tr>
<td>Grade level (11th=1)</td>
<td>.246</td>
<td>-.194</td>
<td>-1.063***</td>
<td>.754</td>
<td>.468</td>
</tr>
<tr>
<td>Sex (Female=1)</td>
<td>.587*</td>
<td>.329</td>
<td>.885***</td>
<td>1.833**</td>
<td>.659*</td>
</tr>
<tr>
<td>Parents Marital Status</td>
<td>.775*</td>
<td>.188</td>
<td>.204</td>
<td>1.171</td>
<td>.806*</td>
</tr>
<tr>
<td>(Married=1)</td>
<td>.507**</td>
<td>.360**</td>
<td>.168</td>
<td>1.306*</td>
<td>.542**</td>
</tr>
<tr>
<td>SES</td>
<td>.125</td>
<td>.410</td>
<td>.519*</td>
<td>.764</td>
<td>-.195</td>
</tr>
<tr>
<td>Internet Access Trouble</td>
<td>.185*</td>
<td>.177*</td>
<td>.028</td>
<td>1.190**</td>
<td></td>
</tr>
<tr>
<td>(No trouble =1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-recreational Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted Pseudo R²</td>
<td>.061</td>
<td>.04</td>
<td>.08</td>
<td>.071</td>
<td>.056</td>
</tr>
</tbody>
</table>

Note: CA=Community attachment, SP=Support and emotional connection with peers, S=Satisfaction of opportunity and need for involvement; CP=Community Participation. The table presents OLS regression coefficients predicting sense of community dimensions for CA, SP, and S, and presents odds ratios predicting CP.

*p<0.08; **<0.05; ***<0.01; ****<0.001
Table 9. Effects of Interaction of Type of Use and Sex on Sense of Community

<table>
<thead>
<tr>
<th></th>
<th>Model (1)</th>
<th>Model (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CA</td>
<td>SP</td>
</tr>
<tr>
<td>Grade level (11th=1)</td>
<td>.241</td>
<td>-.19*</td>
</tr>
<tr>
<td>Sex (Female=1)</td>
<td>1.017</td>
<td>.632</td>
</tr>
<tr>
<td>Parents' Marital Status (Married=1)</td>
<td>.783*</td>
<td>.191</td>
</tr>
<tr>
<td>SES</td>
<td>.501**</td>
<td>.355**</td>
</tr>
<tr>
<td>Internet Access Trouble (No trouble =1)</td>
<td>-.108</td>
<td>.421</td>
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<tr>
<td>Informational Use</td>
<td>.243*</td>
<td>.216*</td>
</tr>
<tr>
<td>Socio-recreational Use</td>
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<td>-.100</td>
</tr>
<tr>
<td>Sex* Informational Use</td>
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<td></td>
</tr>
<tr>
<td>Sex* Socio-Recreational Use</td>
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<td></td>
</tr>
<tr>
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<td>7.424</td>
</tr>
<tr>
<td>Adjusted Pseudo R2</td>
<td>.060</td>
<td>.039</td>
</tr>
</tbody>
</table>

Note: CA=Community attachment, SP=support and emotional connection with peers; S=Satisfaction of opportunity and need for involvement; CP=Community Participation. The table presents OLS regression coefficients predicting sense of community dimensions for CA, SP, and S, and presents odds ratios predicting CP. *p<0.05; **<0.01; ***<0.001
I examined the degree to which type of Internet use exerts curvilinear (u-shaped) effects on the outcomes, such that very high frequency informational or socio-recreational use or very low frequency informational or socio-recreational use are associated with either higher or lower levels of sense of community dimensions (See Table 10). Both hypotheses predict linear effects; however, curvilinear effects did exist for informational use on community attachment, satisfaction of needs and opportunity for involvement, and community participation.

For community attachment, satisfaction of needs and opportunity for involvement, and community participation the curvilinear effect is negative such that both high and low frequency use of the Internet for informational purposes are associated with decreased levels of community attachment and satisfaction of needs and opportunity for involvement, and community participation.
Table 10. Curvilinear Effects of Type of Internet Use on Sense of Community

<table>
<thead>
<tr>
<th></th>
<th>Model (1)</th>
<th></th>
<th>Model (2)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CA</td>
<td>SP</td>
<td>S</td>
<td>CP</td>
</tr>
<tr>
<td>Grade level (11th=1)</td>
<td>.140</td>
<td>-.190</td>
<td>-1.126***</td>
<td>.716</td>
</tr>
<tr>
<td>Sex (Female=1)</td>
<td>.393</td>
<td>.338</td>
<td>-1.004***</td>
<td>1.658*</td>
</tr>
<tr>
<td>Parents Marital Status (Married=1)</td>
<td>.830*</td>
<td>.186</td>
<td>.222</td>
<td>1.191</td>
</tr>
<tr>
<td>SES</td>
<td>.479**</td>
<td>.361**</td>
<td>.153</td>
<td>1.290*</td>
</tr>
<tr>
<td>Internet Access Trouble (No trouble =1)</td>
<td>-.028</td>
<td>.406</td>
<td>.578*</td>
<td>.806</td>
</tr>
<tr>
<td>Informational Use</td>
<td>1.136***</td>
<td>.134</td>
<td>.508*</td>
<td>1.910**</td>
</tr>
<tr>
<td>Socio-Recreational Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Info. Use*Info. Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio. Use*Socio. Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>8.949</td>
<td>7.756</td>
<td>1.719</td>
<td>7.42</td>
</tr>
<tr>
<td>Adjusted Pseudo R2</td>
<td>0.78</td>
<td>0.38</td>
<td>0.88</td>
<td>0.82</td>
</tr>
</tbody>
</table>

Note: CA=Community attachment, SP=support and emotional connection with peers, S=Satisfaction of opportunity and need for involvement, CP=Community Participation. The table presents OLS regression coefficients predicting sense of community dimensions for CA, SP, and S, and presents odds ratios predicting CP.
p<0.08; *=<0.05; **=<0.01; ***=<0.001
In separate analyses (not shown), I used lagged measures of sense of community as controls in an attempt to further establish time order and account for any change over the one year between T1 and T2. Significant correlations between T2 sense of community did not hold when sense of community dimensions from T1 were introduced as controls. Possible explanations are sample size and the short interval between T1 and T2. One year does not constitute a large time frame over which to examine longitudinal change. However, future studies may use such a longitudinal method with more lag between waves of data in order to further establish time order and provide deeper understanding of this relationship between Internet use and sense of community.

In sum, there were several consistent associations between sense of community dimensions and the control variables. Perhaps most notably, females were more likely to participate in community events, yet consistently displayed lower levels of satisfaction of needs and opportunity for involvement than males. In addition, 11th graders also displayed lower levels of satisfaction of needs and opportunity for involvement.

In regards to how Internet use affects sense of community, it is evident that Internet use does have some effect on sense of community, however, that effect is neither uniform in direction or strength across the various dimensions of sense of community. As predicted by the hypotheses, significant differences exist between frequencies of use, but counter to the predictions, these differences only exist for certain dimensions of sense of community, not for all.

In addition, as predicted informational use and socio-recreational use affect sense of community in different ways, however the differences are not consistent. Whereas the hypotheses predicted a one directional effect across sense of community dimensions, this
does not occur. Even within the same type of use, there are both positive and negative effects depending on the sense of community dimension.
Chapter VI

Conclusion

DISCUSSION

This thesis evaluates the degree to which two main theories in the much debated topic of how Internet use affects local communities predict the relationship between rural adolescents' use of the Internet and their sense of community. Positing competing hypotheses correlated to the technological determinism view (Nie and Erbring 2000; Putnam 2000) and the social determinism view (Bargh and McKenna 2004; Dutta-Bergman 2006), this thesis finds no clear support for either set of hypotheses, but rather partial support and partial contradiction for each. I discuss here how these theories help to provide explanation for some of the results, but ultimately how neither theory is exhaustive. I then suggest that it is may be through an interaction of these theories that Internet use affects community outcomes and that future studies should use an approach that acknowledges both the user and the medium.

According to the technological determinism view, more time on the Internet should be associated with lower levels of sense of community and be reflected in the dimensions measured. This partially holds true as those who use the Internet weekly or monthly report higher levels of satisfaction than do those who use the Internet daily. However, counter to the technological determinism view, those who never use the Internet are less likely than those who use it daily.
to participate in community events and programs. Further research is needed to confirm why this occurs, but as suggested by the social determinism view and the research on the goals of adolescent and rural users, the adolescents in this sample may be using the Internet as an avenue to become involved offline and connect with other community members both online and in local community oriented ways, effectively bridging the gap between themselves and other community members.

The difference in support and emotional connection with peers between those who use the Internet daily and those who use it sometimes nearly reaches statistical significance with those who use it daily reporting higher levels of peer support and connection. In fact, of the four dimensions, support and emotional connection with peers appears to be the most positively affected by Internet use. In contrast, of the four dimensions, satisfaction of needs and opportunities for involvement appears to be the most negatively affected by Internet use.

The finding that those who use the Internet weekly or monthly report higher levels of satisfaction of needs and opportunity for involvement than those who use it daily lends partial support to the technological determinism view. Lessening this finding's support of the technological view is the fact that there is no significant difference between those who never use the Internet and those who use it daily. In fact, while not significant, the difference is negative, such that those who never use the Internet report lower levels of satisfaction than do those who use it daily. Perhaps here is
support for the benefits of moderation—those who use the Internet too much or too little, both experience lower levels of indicators of sense of community. ⁷

My exploration of the frequency of type of use similarly yielded varying results with no clear support of one set of hypotheses over the other. According to the social determinism view both types of Internet use, but particularly socio-recreational, would yield increased levels of sense of community. The results indicate that it is informational use that actually shows the strongest positive effect on sense of community. Socio-recreational use is only positively associated with support and emotional connection with peers (this dimension specifically refers to peers within respondent’s local community). Informational use is positively associated with community attachment, support and emotional connection with peers, and community participation.

Not surprisingly, increased use of the Internet for socio-recreational purposes leads to increased levels of peer connection and support. This further confirms the research behind my suggestion that my sample would use the Internet to carry offline, local friendships online, thus, using the Internet to further connect with friends within their local proximity (Gilbert et al. 2008; Chew et al. 2010).

Socio-recreational use is negatively associated with satisfaction of needs and opportunity for involvement as those who use the Internet for socio-recreational purposes more frequently are more likely to report lower levels of such satisfaction. One possible explanation is found in the Internet’s transcendence of time and space. As respondents are exposed to more and more outside their local communities through online social networking sites and other online activities, they realize what may be lacking in their

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⁷ Analyses were re-run with “never” as omitted category and no significant difference in satisfaction of needs and opportunity for involvement or any other dimension was found between who use the Internet “never” and those who use it “sometimes.”
home communities. However, as stated above my findings and research show that rural youths are often connecting online with those who they already know offline—so the exposure may be coming just through medium itself (which is saturated with advertising, news, images, etc.) than through actual online social interactions.

Another possible explanation, socio-recreational use of the Internet provides gratification, communication (i.e. instant messaging), and entertainment all instantly with the click of a button (Green et al. 2005). This may contrast starkly with the rural lifestyle and lead respondents feeling less satisfied with their local surroundings which do not provide such immediate pleasures. For instance, Coös County is known for its beautiful natural amenities; however, the enjoyment of such amenities takes time, effort, and deeper appreciation—things not necessary to finding enjoyment in the virtual world. The fact that informational use of the Internet does not have a significant effect on levels of satisfaction of needs and opportunity for involvement further suggests that outcomes may be affected both by the medium and the reasons for which it is used (i.e. the medium allows for instant gratification of a variety of ends; it is this instant gratification interacting with the desired ends potentially having the effect).

The significance of the a curvilinear effect of informational use on community attachment, satisfaction of needs and opportunity for involvement, and community participation sheds further light on the effects of Internet use and possible considerations for future research. The u-shaped effect is positive for community attachment and satisfaction of needs and opportunity for involvement such that high and low informational use of the Internet is associated with higher levels of attachment and

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8 Interestingly, time spent on the Internet was found to decrease overall life satisfaction in a panel study conducted by Stepanikova et al. 2010.
satisfaction. However, the u-shaped effect is negative for community participation such that those who display medium use of the Internet for informational purposes report the greatest likelihood of community participation.

What can we gather from the presence of these u-shaped effects? Particularly since the curvilinear effects exist for informational use only and not socio-recreational use, one suggestion is that high and low use of the Internet for informational purposes may serve as a proxy for certain personality traits or characteristics that would also affect sense of community. For my thesis, informational use specifically measures whether respondents were using the Internet for educational purposes. Therefore, it may serve as a proxy for academic achievement. If use of the Internet for informational purposes is an indication of academic achievement, high and low achievers may for different reasons be more highly attached to their communities and more satisfied in what their community has to offer (Petrin et al. 2011). Of course this must be tested empirically, and future research should control for academic achievement to better understand these u-shaped effects.

Lastly, I hypothesized that the relationship between sex and sense of community would be stronger for females than males due to females’ sensitivity to sense of community and their greater likelihood of using the Internet for relational purposes. However, no interaction terms for sex and Internet use are significant, suggesting sense of community is not affected by Internet habits and patterns that correspond to sex. When examined on its own sex does not have a uniform or one-directional effect on community outcomes. Therefore, my hypothesis regarding the relationship between sex and sense of community goes largely unsupported.
There was a striking finding regarding sex that was not predicted by any of the hypotheses. Females are nearly two times as likely as males to participate in community events yet display lower levels of satisfaction of needs and opportunity for involvement. This fits with research that suggests that traditional gender roles presume that women will be the main contributors in social realms (Wellman 2001b). One explanation is the females are naturally more interested in community participation and therefore are the ones both doing so and the ones who are desirous of more opportunities to do so.

Another explanation is that perhaps traditional gender roles are inhibiting females as they feel constrained by the expectations placed on them and the opportunities afforded them by their local community. A bivariate correlation shows satisfaction of needs and opportunity for involvement and community participation are negatively correlated. Given that this corresponds to the relationship between sex and these dimensions further research should explore this possible gendered issue. Is sex a confounding variable causing this negative correlation?

As discussed in Chapter 1, conceptualization of “community” is not agreed upon. Different views are based on different conceptualizations of community. Such conceptualizations affect outcomes—which is the case for my results. Some of the dimensions of sense of community align with certain conceptualizations of community more strongly than others. This provides a helpful angle from which to understand the results.

Satisfaction of needs and opportunity for involvement strongly aligns with a place based understanding of community. Whereas community attachment and support and emotional connection with peers refers largely to connection and attitudes towards people
in the community, satisfaction of needs and opportunity for involvement refers strictly to
place based characteristics. Community weakened conceptualizes "community" strictly
as place based. Adhering to technological determinism, this view suggests that Internet
use will negatively affect sense of community. It would follow then that the dimensions
that most closely corresponds to local place is the most negatively affected by Internet
use. This is true in the case of satisfaction of needs and opportunity for involvement,
which was the most negatively affected by Internet use.

Support and emotional connection with peers can occur in online and offline
interactions and therefore, of the four dimensions, this dimension is most characteristic of
the community enhanced view—that community can be fostered and found in
geographical and non-geographical locations. Community enhanced conceptualizes
"community" in a more fluid manner, one that includes but is not limited to physical
locale. This view holds to social determinism, which suggests that the Internet is a tool
that is used according to the goals of the user. As is the case in the results, it would
follow that the dimension most closely corresponding to this fluid conceptualization of
community would be the most positively affected by Internet use. My findings support
the importance of conceptualization and understanding of "community" in determining
and interpreting outcomes.

In conclusion, my research questions are partially answered but in answering
them, many more questions are raised particularly in regard to u-shaped effects, the
gendered nature of community participation and the simultaneous presence of both
technological and social determinism. While users may be choosing their own ends and
purposes for Internet use as the social determinism view rightly points out, they are still
subject to the characteristics of the medium—its transcendence of time and space, provision of immediate gratification, saturation with advertising and information, and propagation of one dimensional, impersonal interactions.

Despite the clearly distinct views on Internet’s effect on community outcomes, my results are mixed and certainly not clear in direction or consistent in strength. Both hypotheses find mixed support, but in many cases there is no effect between Internet use and sense of community, which is not predicted by either set of hypotheses. A possible cause is that the effects proposed by social and technological determinism views are occurring simultaneously thus mitigating each other’s effects and making it hard to clearly parse out how the Internet is effecting sense of community. Future research should explore this possibility and move towards a more holistic approach, one that operates from a framework that acknowledges both the user and the medium as active players in the equation.

Such an approach will move the current discussion further in understanding how the user and the medium interact and hopefully provide practical ways to harness the benefits local communities can derive from the Internet while avoiding the pitfalls to local communities that exist with Internet use (i.e. anonymity, isolation, etc.). Until such a realistic approach is taken and steps for intentional and positive Internet use are developed, neither will the full benefits of the Internet be realized nor the potential hazards of the Internet be avoided.

After all, there is nothing beneficial to local communities inherent in the Internet—it is not place based or local community oriented, but rather at its core, the Internet transcends the boundaries of place. If local communities are to reap the benefits
that are possible for them on the Internet, it will require concerted effort and intentionality. It will require both an engagement of the medium (websites, applications, listservs etc. that foster sense of community) and an engagement of the individual (instilling and promoting community-oriented goals and ends).

LIMITATIONS

This study has several limitations. First, it is focused on a very specific population. Though this is a strength due to the focus and specificity for which it allows, it also presents a limitation in terms of generalizability. In addition, the use of secondary data limits the construction of measures. While my thesis is able to use many of the same concepts that make up the sense of community among Adolescents Index, some concepts found to be important by previous research were not able to be measured due to the absence of questions.

Similarly, the categories of Internet use were limited due to the questions available in the survey. Ideally, socio-recreational use would be broken into two categories, social and recreational, with recreational comprised of measures that captured use of the Internet for such activities as gaming and surfing. This would allow for the effects of informational use of the Internet, Internet communication and networking and Internet entertainment to be measured and differences to be better understood.

Furthermore, as is often encountered in the literature examining Internet use and community outcomes, is the problem of establishing time order. By using measures of Internet use at time one and measures of sense of community at time two, I try to minimize this dilemma. Another difficulty inherent in the study of Internet use is its measurement. When controlling for sense of community dimensions at time 1 to further
establish time order, no significant effects remained. Perhaps, a larger interval between
time 1 and time 2 would have made controlling for time 1 sense of community more
successful.

With the ever expanding and growing digital capabilities, it is hard to achieve a
parsimonious, efficient measurement of Internet use. The recent rise of smartphones has
further complicated the matter as cell phones now have Internet capabilities, and Internet
use is no longer confined to the computer. For the purposes of this study,
operationalization was based on the questions available as well as an effort keep the
measurement as simple yet as effective as possible. By measuring both frequency and
type, my results showed that they yield different results. Therefore, when measuring
Internet it is important to consider both the frequency of use and the type of use as they
are different in their effects.

FUTURE RESEARCH

This is an exploratory study seeking to understand whether there exists a
connection between Internet use and sense of community among rural adolescents.
Future research may consider the potentially gendered nature of community participation
and the possible link to satisfaction of needs and opportunity for involvement. In
addition, to further capture the difference in use between males and females, “recreation”
should have its own category and include measures of gaming and surfing (Weiser 2000).

Research on Internet use’s effects on sense of community may be used in
conjunction with research on the Internet’s effects on psychological outcomes such as
overall wellbeing, depression, and loneliness. Since Internet use effects some sense of
community dimensions, and sense of community is shown to have effects on
psychological outcomes (Van Gundy et al. 2011, Albanesi et al. 2007; Farrell et al. 2003), there is potential to shed light on the connection between Internet use and certain psychological outcomes.

Kraut et al. (1998) in their original panel study included an outcome variable for wellbeing which was comprised of loneliness, stress, and depression. They found Internet use to have adverse effects on wellbeing; however, in their follow-up study they found that the only adverse effect that remained was higher stress. Stepanikova et al. (2010) studied the relationship between Internet use and loneliness and life satisfaction using a panel approach. They found that the more time on Instant Messenger, chatrooms, and newsgroups consistently was associated with increased loneliness and decreased satisfaction. Though different samples were used, this particularly fits with my finding that increased use of the Internet for socio-recreational purposes leads to decreased levels of satisfaction of needs and opportunities for involvement.

Morgan and Cotton (2003) studied cross-sectionally the effects of Internet activities on depressive symptoms in college students. Their results showed that increased hours spent in communication activities (i.e. email and chatroom/instant messaging) were associated with a decrease in depressive symptoms while non-communication activities with associated with increased depressive symptoms. As my findings indicated increased use of the Internet for socio-recreational purposes (mostly communicative in nature) resulted in increased levels of support and emotional connection with peers, perhaps this is an important factor in avoiding depression?

Given that sense of community and its indicators are known to have effects on psychological outcomes, providing coping mechanisms, helping to mitigate negative
outcomes and increasing wellbeing, it could help to explain some of the above documented relationships (Van Gundy et al. 2011, Albanesi et al. 2007; Farrell et al. 1995).

If increased Internet use increased or decreases indicators of sense of community, there may be subsequent corresponding psychological outcomes.

The relationship between Internet use and sense of community in adolescents must be further explored and established, but a natural extension of this research would be to understand the subsequent effects on such psychological outcomes on loneliness, depression, and overall wellbeing—all of which both Internet use and sense of community are shown to be correlates. The Internet is a relatively recent phenomenon and an ever changing one which makes the possibilities for research endless, while, the implications of the Internet’s ubiquity in contemporary American society make the research imperative.

**POSSIBLE APPLICATION**

The findings from this study have the potential for practical application in several ways both on an individual and a community level. Understanding what fosters or detracts from sense of community among rural youth will also shed light on factors in rural youths’ participation in community service and events, constructive activities that allow them opportunity to explore their identities in positive and meaningful ways while taking away time from other destructive behaviors.

Studies done by the Carsey Institute of the University of New Hampshire, confirmed that how “youth spend their free time has implications for their development” applies to Coös County youth (Sharp 2010:1). They found links between out-of-school
activity involvement and cigarette and tobacco, alcohol, and marijuana use. The research studied eleventh graders throughout the county and found that those who were the most involved in activities out of school reported the least amount of substance abuse.

My research found that informational use of the Internet led to increased likelihood of community participation, as suggested above informational use could be a proxy for academic achievement. However, it also showed that those who never used the Internet were more likely to participate in community activities, which may be explained by the time displacement theory. Furthermore, Van Gundy et al. (2011) found that community attachment was a source of psychological well-being among New Hampshire youth. My results showed that increased informational use of the Internet increased community attachment. Further understanding how the Internet affects sense of community, including community attachment, could prove helpful in improving the psychological well-being of rural adolescents.

In their book, Hollowing out the Middle, Carr and Kefalas (2009) express the problem of "bright flight" that rural communities face and the loss of their youth. Chew et al. (2010) also address this and suggest that it is important for the development and sustainability of rural communities that their educated youth return. "Candidates for return migration tend to be those who develop and sustain ties to the communities of their childhood" (Chew et al. 2010:4). Understanding how the Internet may help or hinder a sense of community and such ties to the community will help communities to develop practical ways to retain their youth.

As suggested above, my results indicate that the Internet can be both a help and a hindrance to such an end. Using the Internet to help achieve this end will require both a
realistic and holistic understanding of the user, the medium and their interaction, and a purposeful and intentional plan for the role of Internet use in fostering sense of community. By engaging both the medium and the user, local communities may find ways to foster sense of community in adolescents through online means.
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17-Apr-2012

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IRB #: 5436
Study: Internet Use and Sense of Community among Rural Adolescents
Approval Date: 12-Apr-2012

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, Responsibilities of Directors of Research Studies Involving Human Subjects. (This document is also available at http://unh.edu/research/irb-application-resources.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,

[Signature]
Julie F. Simpson
Director

cc: File
    Vangundy, Karen