



Access to the internet in the context of community participation and community satisfaction

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Abstract

The introduction of the internet in American life has led to debates among media scholars, sociologists and political scientists about the role of the internet in society. Two areas of research that have received substantial attention in the domain of internet effects are digital divide and social capital. Digital divide researchers have pointed out the critical gaps in society among different groups in the context of their access to new media and technology. Social capital researchers have focused on the influence of the internet on community life. The article contributes to the literature by (a) consolidating the two concepts of access and community participation to articulate the community correlates of the digital divide, and (b) applying a complementary resource-based perspective to capture the relationship between the internet and community outcomes. It investigates the role of community access to the internet in the context of the participation of individuals in their communities and their satisfaction with community life.

Key words

community satisfaction • digital divide • internet • social capital

What implications does the internet hold for society? Has society been transformed with the rapid explosion of the internet and if so, how? These questions reflect the growing scholarly interest in the interaction of the internet with different sociocultural processes (Hindman, 2000; Shah, Kwak and Holbert, 2001). Civic engagement (Putnam, 1995; Shah, Kwak and Holbert, 2001) and digital divide (Hindman, 2000) are two critical constructs that have occupied the attention of researchers, policy makers, and members of the public since the early days of the net. Both these areas of research have broader societal implications in the domain of the short-term and long-term effects of this new medium.

The introduction of the internet led to extensive investigation of its effects on community participation (Scheufele and Shah, 2000; Shah, McLeod and Yoon, 2001). Media scholars were particularly interested in how the internet shaped community life (Shah, Kwak and Holbert, 2001). Among the many research projects that studied the effect of the net on civic life, the work of Robert Putnam received much attention in the late 1990s. Putnam (1995) articulated that media consumption reduced the extent to which individuals participated in their communities; that the internet depleted social capital. Putnam's arguments were based on the much-researched displacement theory (Finhoulst and Sproull, 1990; James et al., 1995; Robinson et al., 1997), suggesting that a new form of communication displaces an old form of communication because individuals have a limited amount of time. Spending time on the internet takes away from the time individuals might spend in their communities since individuals have only a limited amount of time (Nie and Erbring, 2000). More time spent on one communicative channel (such as the internet) is less time spent on another communication channel (such as community participation).

Yet another domain of extensive research on the internet centers on the concept of digital divide. Digital divide captures the critical gap in society in the context of who does and who does not have access to the internet (Hindman, 2000). Access lies at the core of digital divide research (National Telecommunications and Information Administration, 1999). This body of research demonstrates that while certain groups in society have access to technology and the Internet, certain other groups are deprived of access to such technology. Information is critical to the growth of a community and its people, and therefore, digital divide creates critical gaps in society (Hindman, 2000; National Telecommunications and Information Administration, 1995, 1998, 1999, 2000). Research indicates wide gaps between the richer and the poorer sections of society with respect to access to new technology. Individuals with greater education and income are also the ones that typically have greater access to the internet than their less educated and lower income counterparts (National Telecommunications and Information Administration, 1999, 2000).

Although both civic engagement and digital divide have received extensive coverage in the communication research on the internet (Hindman, 2000; Shepherd and Rothenbuhler, 2001), they have hitherto been studied under the same umbrella. In other words, the relationship and interlinkage between digital divide and community outcomes has received very little attention from communication scholars. In this article, I synthesize these two major areas of research to examine the effects of access to the internet on community participation and community satisfaction. Access here is defined at both macro and micro levels. While macro level access taps into community access to technology and new media through venues such as public libraries and schools, micro-level access taps into individual access to computers and the internet. The pivotal question answered here is: Do individuals who have access to new media differ from those individuals who do not have access to new media in the context of community involvement and community satisfaction? Answering this research question is important because (a) it helps us better capture the relationship between the internet and the community beyond the traditional displacement-based framework that is widely circulated in the work on the internet and the community, (b) it informs pragmatic decisions about creating technology access points in communities, and (c) it provides fodder for future research in the area. In the next few sections, I will first review the literature on civic engagement and social capital followed by the literature on digital divide. Subsequently, I will propose testable hypotheses about internet access and community outcomes.

CIVIC ENGAGEMENT AND SOCIAL CAPITAL

The term social capital has been broadly used in a plethora of social science disciplines (Hawe and Shiell, 2000; Veenstra, 2000) and refers to the 'ability to secure benefits through membership in networks and other social structures' (Portes, 1998: 6). According to Veenstra (2000), 'social capital has been thought of as the web of cooperative action that facilitates resolution of collective action problems and those features of social structure, such as interpersonal trust, norms of reciprocity and mutual aid, that act as resources for such collective action' (p. 619). Three essential components make up social capital: civic engagement, interpersonal trust, and life satisfaction (Portes, 1998; Scheufele and Shah, 2000; Shah, McLeod and Yoon, 2001). Researchers in the area of social capital have consistently argued that these three factors are closely intertwined (Brehm and Rahn, 1997; Shah, 1998; Shah, McLeod and Yoon, 2001). For instance, a greater level of trust has been shown to be positively associated with a greater level of public participation (Putnam, 1995). On a similar note, life satisfaction is positively associated with civic engagement (Putnam, 1995; Shah, McLeod and Yoon, 2001). The triangle is completed by other research that reveals a positive

linkage between life satisfaction and interpersonal trust (Shah, McLeod and Yoon, 2001). As pointed out by Scheufele and Shah (2000), the three components are tied together by Uslaner (1998) who argues that life satisfaction lies at the core of social capital. While an increasing dissatisfaction leads to a fall in the citizens' willingness to be involved in their communities, an increasing level of satisfaction leads to a greater degree of engagement in community activities.

In his book, *Bowling Alone*, Robert Putnam (1995) pointed out that social capital is on the decline in the United States. Multiple social contextual factors impede or catalyze the involvement of individuals in their communities. Community participation typically increases with age, education, income, employment, church attendance, general sociability and personality strength (Putnam, 1995, 2000; Verba et al., 1995). On the other hand, however, social capital declines with an increase in media use (Putnam, 1995; Uslaner, 1998). The mechanism underlying the impediment to community participation provided by media use is drawn from the much-researched displacement (Shah, McLeod and Yoon, 2001) and cultivation (Gerbner et al., 1980; Hawkins and Pingree, 1981) theories.

Displacement theory articulates that the limited amount of leisure time available to individuals sets the constraints for the different communicative activities they can engage in (Finholt and Sproull, 1990; James et al., 1995; Robinson et al., 1997). Consumption of one particular set of communicative activities displaces other forms of communicative activities. As a result, those individuals that spend a lot of time consuming media in their private spaces are unable and unlikely to participate in their communities (Putnam, 1995; Shah, McLeod and Yoon, 2001). Cultivation theory taps into the effect of the media content on individuals and provides important guidelines for social participation of individuals that are heavy readers or heavy viewers of media (Gerbner et al., 1980). Cultivation theorists argue that the depiction of social reality on mass media cultivates a perception of the world as a mean place, where no one can be trusted. As a consequence, individuals that consume media to a large extent are less likely to trust others in their social network and are less likely to participate in their communities (Gerbner et al., 1980). Social capital, therefore, is depleted by heavy viewership of mass media. Putnam's line of research on the effect of the media on community involvement has been extended to the internet. Academics investigating the effect of the internet on social capital have demonstrated significant effects of the internet on community involvement (Nie and Erbring, 2000). They have pointed out that use of the internet depletes social capital. In other words, as internet use increases, social trust and community participation decrease.

Recently, media scholars have questioned the simplistic use of time spent as an indicator of media use (Shah, Kwak and Holbert, 2001). They argue

that the reduction of media experience to the number of hours spent on particular media does not capture the diversity of media experiences available to individuals within specific media types (Shah, Kwak and Holbert, 2001; Shah, McLeod and Yoon, 2001). After all, different media use patterns serve different functions for the individual consumer (Scheufele and Shah, 2000; Shah, Kwak and Holbert, 2001; Shah, McLeod and Yoon, 2001). According to this line of thinking, the functions served by a specific medium are stronger predictors of civic engagement than the time spent on the medium. Following the functional perspective of media use, Shah, Kwak and Holbert (2001) pointed out that informational uses of the internet are positively associated with the production of social capital while social capital is depleted by entertainment uses of the internet.

Although a growing body of research has studied the effect of the time spent on the internet and the functions served by the internet on community participation, the effect of internet access on community participation has not yet been explored. Access is conceptually and methodologically different from the much-investigated constructs of hours spent on the internet and the functions served by it. Access seeks to differentiate simply between the haves and have-nots of society. It categorizes individuals and communities into groups based on the availability of the internet to them. Instead of studying the differences among the different users of the internet, the emphasis here is on comparing the users with the non-users. This research answers the question: To what extent does having or not having access to the internet affect the extent to which individuals participate in their communities?

The other community construct explored in this article is community satisfaction (Filkins et al., 2000; Heaton et al., 1979; Zuiches, 1981). In spite of its tremendous consequences for the status of the community, satisfaction with the community has not yet been researched in the area of internet effects. Extant research provides ample evidence to document the negative effects of dissatisfaction with the community including the desire to seek other residential locations, community instability, and a lower quality of life (Filkins et al., 2000; Heaton et al., 1979; Zuiches, 1981). Ecological factors such as the area of dwelling have been found to have profound effects on community satisfaction, with rural residents being more likely to be satisfied with their communities than urban residents (Campbell, 1981; Marans and Rodgers, 1975). Other factors found to influence the level of satisfaction with the community include age, education, income, occupational status, gender, family size, friends in the community, migrant status, social/spiritual satisfaction, satisfaction with employment and duration of residence in the community (Theodori, 2001). In this article, I address the relationship between residence in a community with access to the internet and the degree of community satisfaction. Now that the literature

on the linkage between the internet and community outcomes has been presented, the next section will highlight the research on digital divide.

DIGITAL DIVIDE

With the emerging digital economy becoming a major driving force of our nation's economic well being, we must ensure that all Americans have the information tools and skills that are critical to their participation. Access to such tools is an important step to ensure that our economy grows strongly and that in the future no one is left behind. (National Telecommunications and Information Administration, 1999: iv)

The centrality of the internet as a player in the current information age is well established. The internet provides access to unlimited information to the members of the public. In an information-based society such as ours, information is central to communication and commerce. Access to and use of the internet, therefore, is pivotal to the existence of an individual in the information age (Hindman, 2000; NTIA, 1995, 1998, 2000). The internet is conceptualized as an enabler that catalyzes and contributes to economic, professional, and social success of individuals and communities (NTIA, 1999). Currently, access to internet resources is instrumental to enrolling in a university, registering for courses, locating and getting a job, communicating with colleagues, researching and purchasing products, procuring health information and finding public information etc. In fact, academics argue that non-access and non-use of the new media will lead to social isolation (Hindman, 2000) and perceived non-existence (Hammond, 1997) of individuals. Recognizing the importance of access to new technology in mitigating or enhancing the societal gaps, policy makers became increasingly interested in the social distribution of technology. This led to the 'Falling Through the Net' studies published by the National Telecommunications and Information Administration (NTIA) division of the US Department of Commerce. The title of the studies suggest that the non-user of the net is left behind in a world that is marching forward at an incredibly fast pace.

The existing body of research on computer and internet access (NTIA, 1995, 1998, 1999) provides ample evidence documenting widening gaps between the information rich and the information poor. Penetration levels are substantively different between different socioeconomic groups in the United States. The varying degrees of internet adoption across different socioeconomic groups closely resembles existing research on the higher social status correlates of early innovation adoption (Hindman, 2000). This gap between the different demographic segments in the domain of access to computers and the internet is termed the digital divide (Hindman, 2000; NTIA, 1995). Summarizing the research on digital divide, Sparrow and

Vedantham (1996) articulated that 'disparities exist in levels of access between rich and poor and between suburban and inner city residents' (p. 19).

Education is positively associated with access to computer and the internet (Hindman, 2000; NTIA, 1995, 1998, 2000). Schools and workplaces provide individuals the opportunity to become familiar with and learn the necessary skills to use the computer and the internet (NTIA, 2000). In 2000, 69.9 percent of households headed by someone with a post-college education had internet access as compared to 29.9 percent of those households that were headed by someone with a high school but no college degree and 11.7 percent of households headed by someone with less than a high school degree (NTIA, 2000). The median level of education among adult heads of households with internet access was some college. In other words, 50 percent of the population of the heads of households with internet access had at least some college education. 74.5 percent of adults with a bachelor's degree or higher were likely to be internet users as compared to 3.7 percent of adults with elementary education (NTIA, 2000). While use of new media increased by only 2.1 percent for the elementary education group, it increased by 13.4 percent for the college-educated group (NTIA, 2000).

Household income is a positive predictor of home internet access. To explain the relationship, the NTIA report (2000) points to the high price that households have to pay for access to the technology. While 77.7 percent of households earning \$75,000 and over have access to the internet, only 12.7 percent of the households earning \$15,000 have access to the internet (NTIA, 2000). Households with income between \$35,000 and \$49,999 achieved a 46.1 percent penetration rate in 2000. Households under \$15,000 report cost as the most prevalent barrier to gaining access to the internet (NTIA, 1999, 2000).

The digital divide is clearly visible in the context of the distribution of the internet across different races (NTIA, 1998, 1999, 2000). Households of Asians and Pacific Islanders reflect the greatest penetration of the internet at 56.8 percent and also demonstrate the most dramatic growth in net access, increasing at the rate of 20.8 percentage points from 1998 to 2000 (NTIA, 2000). 46.1 percent of white households in 2000 had access to the internet, reporting 16.3 percent points increase from 1998 (NTIA, 2000). However, only 23.5 percent of Black households had access to the internet in 2000, reporting an increase of 12.3 percentage points (NTIA, 2000). Hispanic households demonstrated a similar 23.6 percent penetration in the context of access to internet technology (NTIA, 2000). Yet another area that manifests the internet gap involves the geographic distribution of technology and new media. While 38.9 percent of rural households and 37.9 percent of central city households had internet access in 2000, 42.3 percent of urban

US households had access to the net (NTIA, 2000). The gap in internet between the United States average and central city households has continued to increase (NTIA, 2000).

The findings in the domain of gender demonstrate dramatic shifts. Initial research conducted in the mid 1990s demonstrated that men were more likely than women to use the internet (Times Mirror, 1995; Yankelovich Partners, 1995). However, the trend underwent a reversal in 2000 when Jupiter Media Matrix reported that women had surpassed men in terms of the number of individuals using the internet (Pastore, 2001a). While women over 18 years of age comprised 40.9 percent of all internet users, men over 18 comprised 39.8 percent of the user segment (Pastore, 2001a). In spite of the larger number of women that used the internet, Pastore (2001a) reported that men spent 16 percent more time per month than women in 2001. While the average man spent ten and a half hours on the internet, the average woman spent almost nine hours on the internet in May 2001 (Pastore, 2001a).

Existing research on internet access and demographics points out that the internet user is younger (NTIA, 1998, 1999, 2000). The 18–24 age group had the largest internet use, with 56.8 percent users. internet use among the 55 and over age group was 29.6 percent (NTIA, 2000). Other studies point out that internet usage has dramatically increased among older age groups. According to an internet Data Corp study cited by Pastore (2001b), adults 55 and older represent the fastest growing group of US internet users. Similar results were observed by Media Metrix, documenting that baby boomers and seniors are the fastest growing segment of internet users (Pastore, 2001b).

To remedy the problem of digital divide, the NTIA (1999) recommended public and private initiatives to expand affordable access to information resources. Community access centers such as schools, libraries, and other public access points, according to the NTIA (1998, 1999), are critical to the reduction of the gaps between the information rich and the information poor. Community access centers, it is argued, would reduce the barriers to internet use that are created by socioeconomic factors such as high price of computers and internet accessibility. Individuals with lower income and without the capability to purchase a computer or internet access can access the internet through community access points such as schools and public libraries. Summarizing this idea, the NTIA proposed that the formation and maintenance of community access centers would ensure that all Americans have access to technology. Current research on internet use and access however has not tapped into the notion of community access to technology. In addition to the conceptualization of individual ownership then, it is also important to study community level access. It may be articulated that inhabiting a community that provides access to the internet affects the

extent to which an individual is able to use and mobilize resources for personal and community advancement. Since the internet is the gateway to boundless information and since information is pivotal to the success of an individual in the information age, community access to the internet might provide the key to reducing the existing socioeconomic chasms. Perhaps a community that provides internet access to everyone through its community centers is a more successful and healthier community than a community that does not provide access to its members.

HYPOTHESES

How then does access to the internet affect community involvement and satisfaction with the community? To build research hypotheses, I synthesize the two major areas of research discussed earlier. The driving force in hypothesis building is the core idea that the internet is a critical resource for survival and success; the perspective guiding the construction of hypotheses is based on the concept of complementarity, suggesting that access to the internet (and therefore, access to a large amount of information) complements community participation and community building. As discussed in the last section, one of the public initiatives involving the digital divide targets increasing community access to the internet and new media. Community access to and use of the internet, it was argued, is pivotal to the existence of an individual in the information age. The internet is a facilitator of economic, professional, and social success of individuals and communities by providing access to valuable information. Therefore, community internet access is an empowering tool in the production of positive community outcomes. Access to the internet empowers people by connecting them with information and helps them connect with community and society. Non-access on the other hand creates social isolation and perceived non-existence. In other words, community access to new media enables community members to learn about and access the resources available inside and outside the community. The individual becomes empowered by the information that he/she can now access through the community access points. Individual empowerment, social capital researchers argue, is critical to community participation. It may therefore be hypothesized that greater information about and accessibility to resources provided through the internet fosters greater community involvement of the individual through the process of empowerment. As a consequence, communities with greater access also perhaps become the sites for greater social capital. Individuals living in such communities become the bearers of social capital, participating to a greater extent in their communities. Yet another argument to support the hypothesis originates from the concept that individuals that choose to be active in their communities also perhaps choose healthier communities to live in that

provide access to a wide variety of resources including access to new technology. The hypothesis is formally stated below:

- H1a: Individuals living in communities with access to the internet are more likely to be involved in their communities than individuals living in communities without access to the internet.

Community satisfaction, similar to the role of internet access in the domain of community participation, shows a positive relationship with community internet access. The internet is an enabler that opens up doors for individuals to a plethora of resources. Therefore, individuals that live in communities that provide them with access to the internet are more likely to be satisfied with these communities as compared to individuals living in communities without access to the internet.

- H1b: Individuals living in communities with access to the internet are more likely to be satisfied with their communities than individuals living in communities without access to the internet.

In addition to studying the effects of community access on participation, I examine the role of individual access in the generation of community satisfaction (Brown, 1993; Filkins et al., 2000). In proposing a hypothesis, I build upon the argument laid out by Brown (1993) that personal access to resources is a significant predictor of community satisfaction. Brown (1993) demonstrated that possessing an income adequate to provide access to goods and services was instrumental in the generation of a higher quality of life, which in turn, was central to the production of community satisfaction. At the individual level, it may be argued that those individuals that have access to the internet are better able to harness the resources available in their communities, thus leading to greater community satisfaction. Access to the internet is an indicator of the economic ability of the individual member and is likely to lead to community satisfaction (Brown, 1993; Filkins et al., 2000).

- H2: Users of the internet are more likely to be satisfied with their communities than Non-users of the internet.

Furthermore, the digital divide findings at the individual level may be extrapolated to the level of the community, leading to the question: To what extent do the individual level gaps in society in the domain of age, gender, education and income are mirrored at the level of community access? Extending the individual-level contributors to digital divide to the community level, the following hypotheses are proposed:

- H3: Individuals living in communities with access to the internet are more likely to be educated than individuals living in communities without access to the internet.

- H4: Individuals living in communities with access to the internet are more likely to have a higher income than individuals living in communities without access to the internet.
- H5: Individuals living in communities with access to the internet are more likely to be younger than individuals living in communities without access to the internet.
- H6: Individuals living in communities with access to the internet are more likely to be males than individuals living in communities without access to the internet.

METHODOLOGY

Data

The data used for testing the hypotheses were gathered by the Pew Research Center for the People and the Press (2000). The Pew Center conducts national surveys of the media and technology consumption of individuals (Pew Research Center for the People and the Press, 2000). To avoid 'listing' bias and provide representation of both listed and unlisted numbers, sample for the surveys are random digit samples of telephone numbers selected from telephone exchanges in the continental United States. The design of the samples ensures this representation by random generation of the last two digits of telephone numbers selected on the basis of their area code, telephone exchange, and bank number. Also, the number of telephone numbers randomly sampled from within a given county is proportional to that county's share of telephone numbers in the US. The survey used in this study was conducted in 2000. Experts in the disciplines of new media, consumer behavior and survey design were extensively consulted to guide the construction of questions related to internet use, community participation, and community satisfaction. To ensure flow and comprehensibility of questions, the questionnaire went through multiple pretests.

For every selected telephone number, at least six attempts were made to complete an interview with calls staggered across different times of day and days of the week. Participation in telephone-based surveys tends to vary by the different subgroups of the population, leading to non-response biases. In other words, some groups within the population, owing to their orientation are particularly likely to participate in such surveys as compared to other groups. In order to compensate for these known biases, the sample data are weighted in the analysis and the demographic weighting parameters are derived from a special analysis of the most recently available Census Bureau's Current Population Survey. An iterative technique that simultaneously balances the distributions of all weighting parameters is used to derive the weights. 3142 individuals provided usable data in the study. The mean age of

the respondents of the study was 46.27 (*S.D.* = 18.80). The sample comprised of 46.3 percent men and 53.7 percent women.

Measurement

Community involvement In this research, community is defined as the local neighborhood where the individual resides. Participation in the community was measured by the questions 'Do you belong to or ever work with' 'a community group or neighborhood association that focuses on issues or problems in your community,' 'a local sports league,' 'a local youth group, such as scouts or the YMCA,' 'a local church, synagogue, mosque, or temple,' 'a local social club or charitable organization,' 'some other local group I haven't already mentioned.' Responses were measured in a yes/no dichotomous format.

Community satisfaction As pointed out in the operationalization of community involvement, the neighborhood or local area where the respondent resides is defined as his/her community. Scholars interested in community satisfaction (Filkins et al., 2000) have used a global measure of satisfaction in their studies with respondents denoting their level of satisfaction along a 1 to 5 continuum ranging from 'very dissatisfied' to 'very satisfied.' Satisfaction with the community was measured by the question, 'Overall, how satisfied are you with the neighborhood or area where you now live – very, somewhat, not too, or not at all satisfied?' Responses were measured on a 1 to 4 scale with 1 representing 'Very satisfied,' 2 representing 'somewhat satisfied,' 3 representing 'not too satisfied,' and 4 representing 'not at all satisfied.'

Internet community access Community access to the internet was measured as a dichotomous yes/no response to the question 'As far as you know, is there a place you can go in your neighborhood or community where the internet is publicly available to anyone who wants to use it?'

Personal internet access To measure personal internet access, respondents were asked the question 'Do you ever go online to access the internet or world wide web or to send and receive email?' Responses were measured on a dichotomous scale with 1 representing yes and 2 representing no.

Demographic variables Age was measured by numeric response to the question 'What is your age?' A dichotomous scale measured gender with 1 representing 'male,' and 2 representing 'female.' Income was measured by the question, 'Last year, that is in 1999, what was your total family income from all sources, before taxes?' The item was measured on a 1 to 8 scale, with 1 representing 'less than \$10,000,' 2 representing '\$10,000 to \$20,000,' 3

representing '\$20,000 to \$30,000,' 4 representing '\$30,000 to under \$40,000,' 5 representing '\$40,000 to under \$50,000,' 6 representing '\$50,000 to under \$75,000,' 7 representing '\$75,000 to under \$100,000,' and 8 representing '\$100,00 or more.' Education was measured on a 1 to 7 scale to the question, 'What is the last grade or class that you completed in school?' 1 represented 'none or grade 1-8,' 2 represented 'High school incomplete,' 3 represented 'High school graduate,' 4 represented 'Business, technical, or vocational school after high school,' 5 represented 'some college, no 4-year degree,' 6 represented 'college graduate,' and 7 represented 'post-graduate training or professional schooling after college.'

RESULTS

Hypothesis one stated that individuals living in communities with access to the internet are more likely to be involved in their communities compared to individuals living in communities that do not have access to the internet. Table 1 presents the results of the cross-tabulation between community internet access and community participation. 23.6 percent of individuals living in communities with access to the internet are likely to participate in issue/problem based community organizations as compared to 21.8 percent of individuals who live in communities with no access to the internet.

Table 2 presents the comparison of internet access and non-access in the context of participation in a local sports league. While 22.6 percent of individuals living in communities with access to the internet are likely to participate in a local sports league, 18 percent of individuals living in communities without access to the internet are likely to participate in a sports league.

• Table 1 Differences in involvement in issue/problem based community organizations in the context of internet community access

ISSUE/PROBLEM-BASED COMM. INVOLVEMENT	INTERNET COMM. ACCESS	INTERNET COMM. NON-ACCESS	χ^2
Yes	23.6% ($n = 461$)	21.8% ($n = 173$)	
No	76% ($n = 1486$)	78% ($n = 620$)	9.83*

* $p < .05$

• Table 2 Differences in involvement in community sports league in the context of internet community access

COMM. SPORTS LEAGUE INVOLVEMENT	INTERNET COMM. ACCESS	INTERNET COMM. NON-ACCESS	χ^2
Yes	22.6% ($n = 441$)	18% ($n = 143$)	
No	(77.3%) ($n = 1510$)	82% ($n = 652$)	27.05***

*** $p < .001$

• Table 3 Differences in involvement in community youth group in the context of internet community access

COMM. YOUTH GROUP INVOLVEMENT	INTERNET COMM. ACCESS	INTERNET COMM. NON-ACCESS	χ^2
Yes	23.8% (<i>n</i> = 465)	20.7% (<i>n</i> = 164)	16.39**
No	76.1% (<i>n</i> = 1486)	79.3% (<i>n</i> = 630)	

** *p* < .005

• Table 4 Differences in involvement in community religious organization in the context of internet community access

COMM. RELIGIOUS ORG. INVOLVEMENT	INTERNET COMM. ACCESS	INTERNET COMM. NON-ACCESS	χ^2
Yes	45.5% (<i>n</i> = 889)	41.9% (<i>n</i> = 333)	13.30***
No	54.5% (<i>n</i> = 1062)	58.1% (<i>n</i> = 462)	

* *p* < .05

• Table 5 Differences in involvement in community charity in the context of internet community access

COMM. CHARITY INVOLVEMENT	INTERNET COMM. ACCESS	INTERNET COMM. NON-ACCESS	χ^2
Yes	31.6% (<i>n</i> = 618)	25.4% (<i>n</i> = 202)	12.48*
No	68.2% (<i>n</i> = 1332)	74.6% (<i>n</i> = 593)	

* *p* < .05

Yet another indicator of community involvement is participation in a local community youth group such as scouts or the YMCA (see Table 3). The comparison revealed significant differences between individuals living in communities with access to the internet and individuals living in communities without access to the internet. Living in a community with access to the internet (23.8%) resulted in greater youth group participation than residence in a community without net access (20.7%).

Comparison of internet community access and non-access in the context of participation in religious community organizations is presented in Table 4. In comparison to 41.9 percent of individuals in non-access communities that participate in a local religious organization, 45.5 percent of individuals residing in internet access communities participate in a local religious organization.

Community involvement was also measured by participation in a local social club or charitable organization (see Table 5). The results demonstrated significant differences between individuals living in communities with internet access (31.6% participated in a social club or charitable organization) and those living in non-access communities (25.4% participated in a social club or charitable organization). The results presented

in tables 1 through 5 provide support for hypothesis 1a. Indeed, residence in communities that provide access to the internet is likely to generate greater community involvement.

Hypothesis 1b articulated that individuals that inhabit communities with internet access are also more likely to be satisfied by their communities than individuals who live in communities that are deprived of internet access. To test hypothesis 1b, a t-test was conducted. Supporting hypothesis 1b, the results revealed that the individual who lives in a community that provides internet access ($M = 1.49$; $S.D. = .99$) is indeed more likely to be satisfied with his/her community as compared to the individual that lives in a non-access ($M = 1.73$; $S.D. = 1.38$) community, $t = 7.17$, $p < .001$.¹

Hypothesis 2 proposed a relationship between individual access to the internet and community satisfaction. The results of the t-test revealed that individuals who have access to the internet ($M = 1.53$; $S.D. = 1.00$) are more likely to be satisfied with their communities than those individuals who do not have access ($M = 1.65$; $S.D. = 1.41$) to the internet, $t = 3.86$, $p < .001$. Hypotheses 3 through 6 stated the relationships between demographic variables (education, income, gender and age) and community access to the internet. T-tests were conducted to examine these relationships. Hypothesis 3 was supported with individuals living in internet access communities ($M = 4.48$; $S.D. = 1.63$) being more educated than individuals living in non-access ($M = 3.78$; $S.D. = 1.73$) communities, $t = 14.15$, $p < .001$. Hypothesis 4 was also supported, demonstrating that individuals living in internet access communities ($M = 5.74$; $S.D. = 2.55$) earned more than individuals living in internet non-access ($M = 5.53$; $S.D. = 2.86$) communities, $t = 2.58$, $p < .01$. The individual living in a community with internet access ($M = 43.91$; $S.D. = 17.95$) was younger than the individual living in a community without ($M = 47.51$; $S.D. = 21.14$) access, $t = 6.35$, $p < .001$. Finally, hypothesis 6 was not supported by the results, demonstrating that individuals living in internet access communities ($M = 1.53$; $S.D. = .50$) were more likely to be women than individuals living in non-access ($M = 1.49$; $S.D. = .50$) communities, $t = 2.68$, $p < .01$.

DISCUSSION

Access to the internet is a critical component in the extant literature on the digital divide. Existing research has documented the gaps created in society by virtue of the ability or inability of individuals to participate on the internet. Although scholars and policy makers have engaged in discussions about the effects of these gaps and although the gaps have been empirically demonstrated in the digital divide literature (Hindman, 2000; NTIA, 1999, 2000), limited research exists on the sociocultural and community-level correlates of these gaps. The question that is particularly interesting and yet unexplored relates to the relationship between the digital divide and

community indicators. In this research, I extend the concept of internet access to the level of the community (through local libraries, schools, community centers etc.), positing that community level access or non-access plays an important role in the extent to which individuals participate and are satisfied with their communities. Furthermore, I argue that both social capital generated through community participation and community access to technology share a positive relationship with a higher socioeconomic status, suggesting an accumulation of both technology and social capital in higher socioeconomic areas.

Study results demonstrate that individuals living in access communities are significantly more likely to be involved in different local community organizations than individuals living in non-access communities. In other words, access communities are more likely to be participatory communities as compared to non-access communities. Clearly, there exists a gap between communities in terms of their access to the internet and this gap has detrimental consequences for civic participation. Internet non-access communities are also low social capital communities. A low level of social capital, in turn, has detrimental consequences for the health of the community (Veenstra, 2000; Veenstra and Lomas, 1999). Low social capital communities suffer from higher morbidity and mortality rates (Veenstra, 2000). They often become the clusters for disease, violence, and deviant social behavior (Veenstra and Lomas, 1999). Traditional research on the linkage between social capital and the internet has fundamentally focused on the debate whether or not the internet depletes community participation; in this framework, the internet and community participation are conceptualized as competing communicative avenues that are vying for resources. In this article, I (a) suggest an alternative framework that locates the internet and community participation in a mutually complementary framework, and (b) compare community access and non-access instead of interrogating the traditionally researched question of the effect of time spent on the internet on community participation. The results support the importance of exploring alternative frameworks that explore novel questions beyond the displacement-based conceptualization of competing communicative channels.

The finding that community internet access is positively associated with community participation positions the internet as a resource; the resource-based framework demonstrates that in order to increase the social capital of communities, communities need to be invested with access to resources (including the internet). Technology acts as a community builder; a facilitator of communication among community members and an access point for securing information, a critical resource in the current environment. When the community is provided with access points to

communicative technology (the internet, in this case), its members are more likely to participate in community local organizations. There are multiple possible explanations for this correlation. First, individuals that are more likely to participate in their communities are also more likely to choose communities with plentiful resources including access to the internet. Second, living in a community that provides access to resources including the new media is likely to promote a greater interest in the community and its growth among individuals. Third, a higher socioeconomic ability (education and income) underlies both community access to technology and community participation, explaining the positive relationship. Fourth, a highly mobilized participatory community is likely to be empowered in securing access to resources such as the internet. The process underlying the positive relationship between community access and community participation may be explored in greater depth in future research.

Yet another community indicator used in this study was community satisfaction. To what extent is satisfaction with one's community a product of the resources available in the community? Access to the internet is critical to the success of an individual and his/her community in the information age. Supporting the hypothesis, the results demonstrated that the individual living in a community that provides him/her with access to the internet is significantly more likely to be satisfied with the community as compared to the individual living in a community with no access to the internet. As articulated in the literature review section, community satisfaction is a critical concept. It affects the psychological well being of individuals. Individuals that are more satisfied with their communities are also more likely to stay longer in these communities, producing stability in the community. Dissatisfaction with one's community, however, results in search for other residential locations and this is especially problematic for communities where the population is stagnant or on the decline. To retain community members and increase their levels of satisfaction with their communities, individuals need to be provided access to a plethora of resources within these communities (such as schools, healthcare, recreational facilities, open space etc.). In a communication environment that centrally depends upon information, the access to a valuable resource such as the internet is perhaps an indicator of the socioeconomic capabilities of the community; the lack of access to the internet is perhaps reflective of a broader socioeconomic inability in harnessing critical resources. Therefore, the level of community satisfaction increases with the ability to access the internet through community access points.

I also explored the role of individual access to the internet in the context of community satisfaction. Supporting the nomological network, the results demonstrated that individual access to the internet indeed affects the extent

to which the individual is satisfied with his/her community. This further supports the role of the internet as an information resource. The ability to access information through the internet empowers the individual and produces a greater level of satisfaction with the community that he/she lives in.

The demographic profile of the individual living in communities with internet access supports earlier digital divide research. The individual that lives in a community with access to the internet is likely be younger than the individual living in a community without access to the internet. The individual living in an internet access community is more educated and earns more than the individual inhabiting the non-access community. The findings of this study augment the idea of a critical gap between the higher and lower socioeconomic groups in society in the context of their access to the internet. Not only do the lower socioeconomic groups of society lag behind in their personal access to technology and new media, but also they are disadvantaged in the domain of their community access to the internet. As a consequence, an individual with a lower level of education and income is unable to access the internet either personally (because he/she is unable to pay for access) or through the community. Greater focus and emphasis needs to be put on making the internet more accessible to neighborhoods with lower socioeconomic markers. More fundamentally perhaps, special emphasis needs to be put on securing basic infrastructural resources and capabilities (such as food, clothing, shelter, schools, healthcare, recreational facilities etc.) in underprivileged communities. As the results with the internet accessibility indicator demonstrates, community participation and community satisfaction are positively related with community access to resources. The increased participation, in turn, is integral to the mobilization of the community; it facilitates better ability of the community to positively channelize the available community resources.

The study results raise important questions for the media scholar. How does access to the internet differ from access to traditional media such as the newspaper, television and radio in the production of community participation and community satisfaction? Although this question would be a difficult one to answer within the United States, given the widespread access to traditional media, cross-cultural research comparing countries in the realm of media access might provide some useful insights. Also, this article reflects a first attempt at capturing the relationship between access and community indicators. Future research needs to further examine the process, taking into account demographic variables such as age, education, income, gender, race, and area of dwelling. The confounding, mediator and moderator variables shaping the relationship between internet access and community outcomes further need to be explored.

Note

1 Lower the mean, greater the level of satisfaction.

References

- Brehm, J. and W.M. Rahn (1997) 'Individual Level Evidence for the Causes and Consequences of Social Capital', *American Journal of Political Science* 41: 999–1023.
- Brown, R.B. (1993) 'Rural Community Satisfaction and Attachment in Mass Consumer Society', *Rural Sociology* 58(3): 387–403.
- Campbell, A. (1981) *The Sense of Well-being in America: Recent Patterns and Trends*. New York: McGraw-Hill.
- Dutta-Bergman, M.J. (2002) 'Beyond Demographic Variables: Using Psychographic Research to Narrate the Story of Internet Users', *Studies in Media & Information Literacy Education* 2(3), URL (consulted 28 June 2002): <http://www.utpress.utoronto.ca/journal/ejournals/simile>
- Filkins, R., J.C. Allen and S. Cordes (2000) 'Predicting Community Satisfaction Among Rural Residents: An Integrative Model', *Rural Sociology* 65(1): 72–86.
- Finholt, T. and L. Sproull (1990) 'A Social Influence Model of Technology Use', in J. Fulk and C. Steinfield (eds) *Organizations and Communication Technology*, pp. 117–40. Newbury Park, CA: Sage.
- Gerbner, G., L. Gross, M. Morgan and N. Signorielli (1980) 'The "Mainstreaming" of America: Violence Profile No. 11', *Journal of Communication* 30(3): 10–29.
- Hammond, A.S. (1997) 'The Telecommunications Act of 1996: Codifying the Digital Divide', *Federal Communications Law Journal* 50(1): 179–214.
- Hawe, P. and A. Shiell (2000) 'Social Capital and Health Promotion: A Review', *Social Science and Medicine* 51(6): 871–85.
- Hawkins, R.P. and S. Pingree (1981) 'Uniform Messages and Habitual Viewing: Unnecessary Assumptions in Social Reality Effects', *Human Communication Research* 7: 291–301.
- Heaton, T., C. Fredrickson, G.V. Fuguitt and J.J. Zuiches (1979) 'Residential Preferences, Community Satisfaction, and the Intention to Move', *Demography* 16(4): 565–73.
- Hindman, D.B. (2000) 'The Rural-Urban Digital Divide', *Journalism and Mass Communication Quarterly* 77(3): 549–60.
- James, M.L., C.E. Wotring and E.J. Forrest (1995) 'An Exploratory Study of the Perceived Benefits of Electronic Bulletin Board Use and Their Impact on Other Communication Activities', *Journal of Broadcasting & Electronic Media* 39(1): 30–50.
- Marans, R.W. and W. Rodgers (1975) 'Toward an Understanding of Community Satisfaction', in A. Hawley and S.M. Mazie (eds) *Nonmetropolitan America in Transition*, pp. 299–352. New York: Halsted Press.
- National Telecommunications and Information Administration (NTIA) (1995) *Falling through the Net: Defining the Digital Divide*. Washington, D.C.: US Department of Commerce.
- National Telecommunications and Information Administration (NTIA) (1998) *Falling through the Net: Defining the Digital Divide*. Washington, D.C.: US Department of Commerce.
- National Telecommunications and Information Administration (NTIA) (1999) *Falling through the Net: Defining the Digital Divide*. Washington, D.C.: US Department of Commerce.

- National Telecommunications and Information Administration (NTIA) (2000) *Falling through the Net: Defining the Digital Divide*. Washington, D.C.: US Department of Commerce.
- Nie, N.H. and L. Erbring (February, 2000) *Internet and Society: A Preliminary Report*. Stanford Institute for the Quantitative Study of Society.
- Pastore, M. (2001a) 'Women Maintain Lead in Internet Use', *Cyberatlas*, URL (consulted ???): <http://cyberatlas.internet.com>
- Pastore, M. (2001b) 'Internet Use Continues to Pervade US Life', *Cyberatlas*, URL (consulted ???): <http://cyberatlas.internet.com>
- Pew Research Center for the People and the Press (2000) *Internet Sapping Broadcast News Audience*. Washington, DC: Pew Research Center for the People and the Press.
- Portes, A. (1998) 'Social Capital: Its Origins and Applications in Modern Sociology', *Annual Review of Sociology* 24: 1–24.
- Putnam, R.D. (1995) 'Bowling Alone: America's Declining Social Capital', *Journal of Democracy* 6(1): 65–78.
- Putnam, R.D. (2000) *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster.
- Robinson, J., K. Barth and A. Kohut (1997) 'Social Impact Research: Personal Computers, Mass Media, and Use of Time', *Social Science Computer Review*, 15(1): 65–82.
- Scheufele, D.A. and D.V. Shah (2000) 'Personality Strength and Social Capital: The Role of Dispositional and Informational variables in the Production of Civic Participation', *Communication Research* 27(2): 107–31.
- Shah, D.V. (1998) 'Civic Engagement, Interpersonal Trust, and Television Use: An Individual Level Assessment of Social Capital', *Political Psychology* 19(3): 469–96.
- Shah, D.V., N. Kwak and R.L. Holbert (2001) "Connecting" and "Disconnecting" With Civic Life: Patterns of Internet Use and the Production of Social Capital', *Political Communication* 18: 141–62.
- Shah, D.V., J.M. McLeod and S. Yoon (2001) 'Communication, Context, and Community: An Exploration of Print, Broadcast and Internet Influences', *Communication Research* 28(4): 464–506. <goohl0> Shepherd, G.J. and E.W. Rothenbuhler (eds) (2001) *Communication and Community*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Sparrow, J. and A. Vedantham (1996) 'Inner-City Networking: Models and Opportunities', *Journal of Urban Technology* 3(1): 19–28.
- Theodori, G.L. (2001) 'Examining the Effects of Community Satisfaction and Attachment on Individual Well-Being', *Rural Sociology* 66(4): 618–28.
- Times Mirror (1995) *Technology in the American Household: Americans Going Online*. Washington D.C.: Times Mirror Center for the People and the Press.
- Uslaner, E. (1998) 'Social Capital, Television, and the Mean World: Trust, Optimism and Civic Participation', *Political Psychology* 19(3): 441–67.
- Veenstra, G. (2000) 'Social Capital, SES and Health: An Individual-level Analysis', *Social Science and Medicine* 50(5): 619–29.
- Veenstra, G. and J. Lomas (1999) 'Home is Where the Governing Is: Social Capital and Regional Health Governance', *Health and Place* 5(1): 1–12.
- Verba, S., K.L. Schlozman and H.E. Brady (1995) *Violence and Equality: Civic Volunteerism in American Politics*. Cambridge, MA: Harvard University Press.
- Yankelovich Partners (1995) *The Yankelovich Cybercitizen Report*. Atlanta: Yankelovich Partners.

Zuiches, J.J. (1981) 'Residential Preferences in the United States', in A. Hawley and S.M. Mazie (eds) *Nonmetropolitan America in Transition*, pp. 72–115. New York: Halsted Press.

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