

Does the Internet Make People Socially Isolated? A Social Network Approach¹

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AbstractS

The present study investigated whether Internet use and type of Internet use are associated with social isolation within Internet users. There have been hopes and fears of the Internet's social impacts since it emerged. Among different social impacts, this paper focuses on the impact of the Internet on people's social connections. The main question of this study is that whether Internet use affects people's social ties? Based on a social network approach, two hypotheses are suggested; Firstly, Internet use will decrease social isolation and secondly, social use of Internet will reduce social isolation. A sample of 204 cybercafé users in Tehran was nominated to participate in the survey. Analyzing the findings, it appeared that the both Internet use and social use of Internet will be slightly associated with reduced level of social isolation.

Introduction

Since the mid-1850s, scholars have debated how technological innovation affects community. Today, the Internet is becoming a mainstream *medium* (McQuail, 2005: 39) that may soon be as pervasive as telephone and television although the speed of its diffusion seems much faster. The Internet could change the lives of average citizens as much as did the telephone in the early part of the 20th century and television in the 1950s and 1960s (Kraut et al, 1998).

The Internet is a revolutionary method of communication. As Wellman and Gulia (1999: 1) point out, 'for the first time in the history of the world, it is possible to have an ongoing, fast moving conversation with people regardless of their physical location, schedule or other such constraint. With the development of the Internet and with the pervasiveness of communication between networked computers, we are in the middle of the most transforming technological events'.

The social impact of the Internet has been under close scrutiny since its emergence and among the manifold social consequences of the Internet, this paper focuses on the effects of the Internet on people's relations. This issue has generated a great deal of debates among researchers and like any major innovation the Internet has elicited both fear and enthusiasms.

Although computer-mediated communication allows for greater connectivity to resources and information, some critics argue that life on the net, contribute to an incomplete lifestyle that

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withdraws people from the full range of in-person contact and by getting them so engulfed in a simulacrum virtual reality, disconnects them from their families, friends and communities (Kraut, Lundmark, Patterson, Kiesler, Mukopadhyay and Scherlis 1998; Nie and Erbring 2000). As Wellman (2002: 3) argued, 'there have been fears that by immersing people in the monitors, the Internet would weaken face-to-face community and domesticity'.

On the opposite side of the debate, there have also been hopes that the Internet would facilitate new forms of voluntary communities based on shared interests and would even form the relational basis for increased face-to-face contacts.

Coget, Yamauchi, and Suman (2002) identify two scenarios on how the Internet will affect people's social connections; pessimists and optimists. The Internet pessimists, Coget *et al.* (2002: 181) maintain, fear the creation of a 'post-modern world plagued with anomie and loneliness'. They believe that 'global village finally destroys local communities'. Internet optimists believe that 'the Internet provides new opportunities to meet people and increases the efficiency and speed of so many transactions that in turn saves time for other activities, including face-to-face interactions'. The purpose of this article is to revisit this issue among Persian Internet users.

Literature Review

Relationship with people is important in both instrumental and socio-emotional domains. 'The closer and stronger our ties with people are, the broader the scope of their support for us would be' (McPherson et al. 2006: 354; Wellman and Wortley 1990).

The current debate over the impact of Internet use on social ties can be traced back to the publication of Rheingold's (1993) influential book on *virtual communities* where the Internet was described as capable of bringing strangers together to form infinite online network.

The debate was later extended to arguments about whether or not the growth of online connections is at the expense of offline relationships. Some studies have suggested that Internet use encourages the creation of online relationships, which in turn replace face-to-face contacts. Some quantitatively oriented researches sought to test the various hypotheses using survey data. Based on a longitudinal quasi-experiment study of 169 people in 73 households over a 2-year period in which they were each given a free computer and free access to the Internet, Kraut et al (1998) found that Internet use was detrimental to offline interpersonal relationships. According to their findings "greater use of the Internet was associated with declines in participant's communication with family members in the household, declines in the size of their social circle and increase in their depression and loneliness". Kraut et al (1998) have laid out a tentative theory that offers two main

explanations for the negative consequences observed. The first involves displacement of social activities, because the time spent online is unavailable for other activities. The second explanation advanced by Kraut is that Internet users replace strong face-to-face ties with weak online ties. In a sense, depth of social relationship is traded for breadth. Kraut and his associates dubbed the findings as "Internet paradox" because use of the Internet, a technology for social contact, actually led to reduction of offline social ties. This paradox argument received further support from "Nie and Erbring" report by the Stanford Institute for the Quantitative Study of Society (Nie and Erbring, 2000). It shows that on average, the more time spent on the Internet, the less time spent with friends, family and colleagues.

However, the opposite findings have been reported as well. More surprisingly, in a follow up study of their earlier sample, Kraut et al (2001) discovered the exact opposite of what had previously been reported. Participants who used the Internet more, had larger increases in the size of their social network and face to face contacts and interaction with friends and family increased.

Another work is a study that analyzed Netville wired suburb. Netville is a newly-built development of approximately 109 medium-priced detached homes in a rapidly growing, outer suburb of Toronto. Hampton and Wellman surveyed residents moving into and living in Netville. In 1997, Hampton moved into Netville and conducted an ethnography for two years while participating in formal and informal community events. Netville residents varied from beginner to expert in their degree of computer and Internet experience. Of the 109 homes that comprised Netville, 64 were connected to the local network while 45 remained unconnected. The key finding is that living in a wired neighborhood encourages greater community involvement, expands and strengthens local relationships with neighbors and family, and helps maintain ties with friends and relatives living farther away.

Based on Netville study, Internet does not replace existing means of communications but 'adds on to it so that the more people use the Internet, the more overall contacts they have with friends and relatives' (Haythornthwaite and Wellman 2002: 28). In other words, 'much like the telephone, the Internet is more useful for maintaining existing ties than for creating new ones' (Zhao, 2006: 846).

Another study in 1998 was a survey of 39,211 visitors to the National Geographic Society web site, one of the first large-scale web surveys. Findings show that Internet use supplements — rather than increases — in-person and telephone contact with friends and relatives, both near and far (Wellman et al, 2001).

Another large scale study was conducted in Catalan society. This research analyses the relationship between social structure, culture, social practices and the Internet uses in Catalan society based on data from a survey carried out in spring 2002. These relationships

are placed within a wider, transformation framework, that of the emergence of the network society as a social structure characteristic of the information era. Catalan society is extremely sociable in comparison with other advanced societies and Internet uses contribute to the development of this sociability instead of weakening it. In summary, Catalan society is extremely sociable in comparison with other advanced societies.

Wellman (2002) asks, 'Does the Internet increase, decrease or supplement other forms of interaction?' and his response is 'the evidence is mixed'. Zhao (2006) aptly asks, 'How did empirical research end up producing such bewildering amounts of contradictory findings?' A number of factors can be identified as possible contributors. Differences in research design may have played a role. Many of these studies were based on cross-sectional survey that could lead to incorrect conclusion regarding casual relationships. Use of differing measurement may also have contributed to the conflicting results.

Conceptual Framework

With the advent of the Internet, a new field of investigation has emerged within computer mediated communication research. It focuses on the Internet and how it affects people's social networks.

The Internet supports the new society in which the interpersonal connectivity is based on social networks. The developed world is in the midst of a paradigm shift in the ways in which people, organizations and institutions are connected. 'The traditional human orientation to neighborhood and village-based groups is moving towards communities that are oriented around geographically-dispersed social networks' (Pew Research Center 2006).

'People communicate and maneuver in these networks rather than being bound up in one solidary community'(Pew Research Center 2006). Although the transformation began in the pre-Internet 1960s, the proliferation of the Internet both reflects and facilitates the shift.

The technological development of computer-communications networks and the societal flourish of social networks are now affording the rise of "*networked individualism*" (Wellman, 2002). The Internet does not produce the networked society, but support it.

As Wellman (2002: 14) puts it, 'If "community" is defined socially rather than spatially, then it is clear that contemporary communities rarely are limited to neighborhoods. They are communities of shared interest rather than communities of shared kinship or locality and people usually obtain support, companionship, information and a sense of belonging from those who do not live within the same neighborhood or even within the same metropolitan area. Many people's work involves contact with shifting sets of people in other units, workplaces, and even other organizations. People maintain these ties through phoning, emailing, writing, driving, railroading, transiting, and flying'. Wellman and Gulia (1999) argue that 'social network analysts had to educate traditional, place oriented, community

sociologist that community can stretch well beyond the neighborhood'. Hence, Wellman (2002: 18) holds, 'with fuzzy network boundaries, individual autonomy and agency become more important, as each person becomes the responsible operator of her own personal network'.

Now let's clarify the social isolation concept. Social isolation is conceptually close to alienation, loneliness and is in the opposite side of social involvement, social capital and social integration. It has been considered as a dimension of alienation (Seaman, 1975). Also it has widely been studied in urban sociology literature (Klinenberg, 2002; Fischer, 1973). In this research we take social isolation into account as contrary to social involvement. Social involvement is mainly related to the size of person's social network and also embedded support within the person's social network (Kraut, 1998). Hence, social isolation is a situation wherein a person lacks enough social ties to get the needed social support. So to answer the question of Internet's impact on social isolation, we ought to know that what Internet does to the people's social networks. Does it provide a new resource of social support with people?

Garton et al. (1999: 81) note that, 'typically, analysts approach social networks in two ways: one approach considers the relations reported by a focal individual. These ego centered (or personal) networks provide views from the perspective of the persons (egos) at the centers of their networks. Members of the network are defined by their specific relations with ego. Analysts can build a picture of the network by counting the number of relations and diversity of relations'. They maintain that, 'this ego-centered approach is particularly useful when the population is large or the boundaries of the population are hard to define'. The second approach, by contrast, 'considers a whole network based on some specific criterion of population boundaries, such as a formal organization, department, club, or kinship group (1992: 82). In this approach, 'a whole network describes the ties that all members of a population maintain with all others in that group'. Wellman (1998: 28) contends that, Egocentric network studies have often meshed well with traditional survey techniques and that, 'researchers have typically interviewed a sample of respondents inquiring about composition, relational patterns and contents of their network'. This approach is used in this research to study personal network of the respondents.

Personal networks can vary in their *range*: that is in their size and heterogeneity. Large, heterogeneous networks are good for obtaining new resources (Garton et al, 1999; Wellman, 1988).

Now let's verify if the Internet increase the range of a social network. How does people's Internet use correlate with the size of their social networks? 'On the one hand, some means of communications such as email allows for flexible interaction because it is asynchronous—messages sit there until they are read—and provides the user more control over the length of time invested in each interaction than either in-person or phone contact. But the accessibility of email may also be burdensome. On the other hand, people are more willing to contact each other by email than by knocking at doors or making telephone calls. It scarcely costs them

any more time to send an email message to many people instead of just one. Hence, email can support the growth of communication, especially as it adds on to—rather than replaces— in-person and even phone contact.'(Pew Research Center 2006c)

Research conducted by Pew Research Center (2006c) shows that, 'the opportunities that large social networks provide are obvious. There are more people to socialize with and to provide social capital. There is the possibility for more diversity in larger networks, and that expands the kinds of experience people share within a network and the kinds of resources they contribute'.

Also, 'as the size of a person's social network increases, it becomes more difficult for people to contact a large percentage of network members' (Pew Research Center 2006a). Studies shows that, 'it is a burden because it takes time and energy to maintain a large network, especially when it comprises not a single solidary group but a fragmented group with many discrete clusters and relationships. More ties can also mean more requests for social capital. Increased opportunity for socializing may bring the burden of too-frequent conviviality'(Pew Research Center 2006c).

Email enables people to maintain more relationships easily because of its convenience as a communication tool and the control it gives in managing communication. Email's asynchronous nature – the ability for people to carry on conversations at different times and at their leisure – makes it possible for a quick note to an associate, whether it is about important news or seeking advice on an important decision. Moreover, it is almost as easy to email a message to many people as it is to email to only one. People use email to contact about the same percentage of those in their social networks, regardless of whether they are small or large.

As indicated by Pew Research Center (2006c), 'email provides more control over time spent on each interaction. In comparison with other communication media, email users have more autonomy over the time spent interacting. Interactions that occur through other media typically require that all parties involved agree to end the interaction. Yet, if one party wants to end the interaction while another wants to continue, the person who wants out of the interaction may feel it rude or awkward to end the interaction, resulting in spending more time. Email allows time-conscious people to avoid these situations, giving them the opportunity to communicate only what they feel necessary' and that, 'email fills a communication void—not by substituting for more in-depth contact, but by augmenting otherwise rarer contact'.

Thus the Net facilitates forming and maintaining connections between people and virtual communities. Wellman et. al (1996) note that, 'people can greatly extend the number and diversity of their social contacts when they become members of computerized conferences or broadcast information to other computer supported social networks members'.

Also Internet increases the heterogeneity of person's social network. Garton et al (1999) argue that, 'by reducing the impact of social cues, computer-mediated communications supports a wider range of participants and participation'. Similarly, Wellman et al (1996) contend that, 'the relative lack of social presence on-line fosters relationships with Net members who have more diverse social characteristics than are normally encountered in person'. This allows relationships to develop on the basis of shared interests rather than to be stunted at the onset by differences in social status.

Social support is theoretically derived from social network (Kraut, 1998). The less the range of a social network, the less the embedded social support. One's personal network is the avenue for help.

Wellman and Gulia (1997, pp. 3,14) assert that 'a community is more than the sum of a set of ties: its composition and network structure affects how it supplies companionship, supportiveness, information and a sense of identity' and 'the focus on shared interest rather than on similar characteristics can be empowering for otherwise lower-status disenfranchised groups'.

Wellman (1990) holds that, people's networks affect their capacity to address various problems in their lives and the Internet and other communication technologies leverage people's social networks. Close relationships usually provide only a few kinds of social support. Those who provide emotional aid or small services are rarely the same ones who provide large services, companionship or financial aid. People do get all kinds of support from community members but they have to turn to different ones for different kinds of help. He maintains that, 'this means that people must maintain differentiated portfolio of ties to obtain a variety of resources'. When strong ties are unable to provide information, people are likely to seek it from weak ties. Because people with strong ties are more likely to be socially similar and to know the same persons, they are more likely to possess the same information.

This idea is supported by research conducted by Pew Research Center (2006b) that indicates, 'The Internet and other communication technologies often serve as bridges to help. But is there a clear "Internet effect" that can be identified in these exchanges in social networks? Perhaps communication technologies are additional channels that open doors to tangible (e.g. loans) and intangible (e.g. advice) sources of help. Or maybe 'they let people cultivate and maintain ties with acquaintances that are called upon to provide help or advice at certain times'.

'People draw on their network capital when they need help. The Internet and other communication technologies play an important supporting role in maintaining or cultivating social networks so that they can be called upon when needed' (Pew Research Center 2006b).

However, information is only one of many social resources exchanged on-line. Despite the limited social presence of computer-mediated communication, people find social support, companionship, and a sense of belonging through the normal course of computer supported social networks of work and community, even when they are composed of persons they hardly know.

Many of Internet ties are weak ties. Weak ties are not free of support, but they are important resources to gain information, spending leisure time, communication, civic engagement and enjoyment (Castells, 2001: 128). By contrast, new information is more apt to come through weaker ties better connected with other, more diverse social circles. The lack of status or situational cues can also encourage contact between weak ties.

Weakly tied persons, although less likely to share resources, provide access to more diverse types of resources because each person operates in different social networks and has access to different resources. The cross-cutting "strength of weak ties" also integrates local clusters into large social systems (Garton et al. 1999).

Based on above-mentioned points, we can conclude that Internet will increase the size and heterogeneity of personal social networks that means more social support. Therefore Internet use will theoretically result in decreased social isolation.

Hypothesis 1: Using the Internet will be negatively associated with user's social isolation.

On the other hand, different kinds of the Internet use (social or antisocial) are important. In general, the activities online fall into two categories:

- a) Social activities such as email and chatting that promote interaction.
- b) Asocial activities such as web surfing and reading the news.

When the Internet is envisioned as just an informational tool rather than a social space, the use of Internet could cause users to be more isolated and engage people in asocial activities, then even more than television, its immersive-ness can turn people away from community, organizations and politic involvement and domestic life. By contrast, when people use the Internet to communicate and coordinate with friends, relatives and organizations – near and far – then it is a tool for building and maintaining social capital (Wellman et al, 2001). Hence it can be concluded that social uses of the Internet will be negatively associated with social isolation.

Hypothesis 2: Social use of Internet will be negatively associated with user's social isolation.

Research Method

In an ego-centered network study, a set of people (selected on the basis of one sampling method) are asked to generate a list of people (alters) who are the members of their personal social network. For instance, 'a person may be asked to report on the people he or she goes to for advice about work matters or personal matters. When the naming of alters is not restricted to a specific group, ego-centered approaches can help identify the different social pools on which people draw for different resources' (Wellman and Wortley, 1990).

When researchers study personal social networks, a key issue is what type of relations they want to measure. The ideal, of course would be to assess several types of relationships (e.g., friends, coworkers, neighbours, family, etc.). In this research in studying personal network, we limited the measuring level just to respondents' friends and acquaintances. In other words, of the different types of relations that a person has, including ties with family, neighbors, friends, relatives and colleagues, we just studied the friends and acquaintances.

The dependent variable, social isolation, as discussed before, has been operationalized through measuring the size and heterogeneity of the person's social network and embedded social support within his social network. These items were, thus, used to construct a scale to measure social isolation.

To measure the Internet use, as Kruat (1998) did, the number of hours spent daily on the Internet was considered as indicator.

To measure the social use of Internet, 12 different types of Internet uses were listed in the questionnaire. Then respondents were asked to rank the items from the most used to the least, thereby it was clear whether each person uses the Internet more socially or antisocially. Also the respondents were requested to mention how many times they communicate with their friends through email, chat, etc. in a 7-point Likert scale (From daily to once a year).

Combining these items, the measure of social use of Internet was constructed.

Both the Internet use and type of Internet use are known to be associated with certain social demographic variables (Cole et al, 2000; Levy et al, 2000). Five such variables are controlled for in the multiple regression models. These include respondent's age, family income, gender (coded into male and female), marital status (coded into never married, married, widow, divorced, else), employment status (coded into full time job, part time job, university student, school student, unemployed, others), education (coded into guidance school, high school, associate diploma, B.S., M.S., Ph.D.).

Survey

Tehran is in a situation where accessing the Internet rapidly increases. Due to low speed of the Internet at homes many people do not use the Internet at their homes and there is an interest in cybercafés which have ADSL.

There are a lot of cybercafés in Tehran whose exact number and location are not available from any organization. Attempts were made to find distribution pattern of these café nets but it did not work out. Finally, to proceed, Tehran was divided into 5 districts including north, south, west and eastern part of the city and city center. Thereafter, in each district, a number of café nets were selected and some users randomly were asked to complete the questionnaire self-administratively. The data for the study were collected in August 2006 from a sample of 204 individuals of cybercafé users in Tehran.

Description of the Sample

We used self-reported measures to assess demographic characteristics of the participants. The mean age of the sample was 22.99 (SD=5.85), with 80 percent male and 20 percent female. As for marital status, 75 percent of the sample were single, 15.7 percent married, 0.5 percent divorced, 0.5 percent widow, 1 percent others (7.3 percent missing data). Regarding job condition, 18.6 percent were unemployed, 16.7 percent were in part time job, 12.7 percent were in full time job, 27 percent university students, 2.3 percent were at military service, 15.7 percent school students and 8 percent others (2.9 percent missing data). The mean number of the family members was 4.7.

In all of the regressions, age, gender, education and income were included as control variables because all have been shown to relate to Internet use (Cole et al 2000; Levy et al, 2000) and they might also be related to the dependent variable.

Each set of regressions ran two nested models, with model 1 only featuring control variables and model 2 both control and independent variables. This allows one to see whether there is a significant R^2 change between the models when adding covariates. In other words, does addition of independent variables lead to significant predictive improvement on the level of the dependent variable? The correlation matrixes used for the first and second type of regressions are shown in table 1 and 2.

Result

A total of 66 percents of respondents said that they have found friends on the Internet and 50 Percent have met these friends out of the Internet.

Hypothesis one was supported. Internet use is slightly associated with a decreased level of social isolation. Time spent online during the day has a negative relationship with social

isolation. The predictive power of this model is limited by R^2 statistics. Only 4 percent of the variance of social isolation was explained.

Hypothesis 2 also was supported. Social use of Internet decreases social isolation. Findings demonstrate negative relationship between social use of the Internet and social isolation. Only 2 percent of dependent variance is explained by the type of Internet use. Regression results have been shown in tables 1 and 2.

Table1: Regression model regarding impact of Internet use and social isolation

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Sig.</i>	β
1	0.201 ^a	0.040	0.032	6.07444	0.028 ^a	- 0.186
2	0.242 ^b	0.058	0.042	6.04341	0.031 ^b	-0.135

Table 2: Regression model regarding impact of social use of the Internet and social isolation.

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Sig.</i>	β
1	0.181 ^a	0.033	0.025	6.41826	0.042 ^a	-0.161
2	0.230 ^b	0.053	0.037	6.37681	0.035 ^b	-0.141

Discussion

This study was an ~~partially exploratory~~ effort to measure the social impact of the Internet. The contribution of this article mainly involve a new evidence to answer the key question: does the Internet affect people's social relations? How does it do so? An important direction for the research is to verify the possible causal relationship between general Internet use and measures of social isolation.

The most important limitation of this study is its one time correlational design, which does not allow for causal inference. One can not be sure of the direction of causality.

Another limitation of our study is that we relied upon self reports of Internet behavior, and finally the convenience of sample used, restricts the generalizability of the results.

Consistent with the general idea of Wellman and his associates, the Internet has a direct negative impact on social isolation.

It is a quite consensus among scholars that there is no single effect in all societies due to using Internet. Researchers show that like other technologies, in the beginning years of the advent of a new technology some negative effects appear. But after some years and widespread use of it, the negative effects gradually disappear (Kraut et al, 2001). The use of Internet as a new means of communication is rapidly growing, but due to lack of some necessary infrastructures, the speed of Internet is low. Hence, people prefer to access the Internet in cybercafés, governmental organizations and universities which enjoy ADSL.

There is also another important factor in Iranian society which greatly affects the type of Internet usage. Young men and young women are not allowed to communicate free in public places according to some religious and political policies. There are a number of limitations that keep people of different genders separated from each other. Thus, young people look for ways to communicate with people of different gender to overcome the limitations. The Internet in this social context plays an important role. It provides an excellent tool for communication that no one is able to prevent and to pick on them. The results of our research shows that a large portion of the Internet users in Tehran use the Internet for finding friends that in turn leads to reduced amounts of social isolations.

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