

WHO MAKES FRIENDS OVER THE INTERNET? LONELINESS AND THE “VIRTUAL” COMMUNITY

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1. Introduction

As methods of communication become more diverse, the ways people interact also become more varied. In the past, writing letters was a common form of communication. Technological advances like the telephone gave people a new way to contact loved ones. The most recent development in communication technology is the Internet. People use the Internet to play games, hold conferences, and communicate via electronic mail and “chat” rooms. Friends and relatives are often just an email away, and the Internet lets people around the world stay in touch.

Not only does communication technology change the way people interact with their family and friends, but it also affects how people establish new friendships. Previously, some people would make friends by writing letters to a “pen pal” who lived far away. Pen pals would get to know each other by describing their lives in letters, perhaps never meeting in person. The 21st century version of the pen pal incorporates the Internet. People can meet via chat rooms or news groups, begin communicating online, and form friendships without the individuals ever meeting face-to-face.

The Internet has become more and more common as computers have moved from luxury items to fixtures in American homes. A

survey of over 2,600 U.S. households indicated that 65% of Americans have at least one computer, and 55% of Americans have Internet access at home, work, or school (Nie & Erbring 2000). In 1998, the United States Postal Service delivered 101 billion pieces of paper mail, whereas email users sent an estimated four trillion pieces of electronic mail (UCLA Internet Report 2001). It is projected that ten percent of the world's population, or 600 million people, will be using the Internet by 2001 (McKenna & Bargh 2000). More than 40% of people who currently do not use the Internet say they are likely to become Internet users in the next year (UCLA Internet Report 2001). The Internet is growing explosively in popularity.

Certain people are more likely to use the Internet than others. Young adults tend to use the Internet most often (NIE & ERBRING, 2000). Males use the Internet more than females, although Nie and Erbring (2000) called the difference a "faint gender gap" and the UCLA Internet Report (2001) noted that in the age ranges of 12-15 and 46-55 years women use the Internet more than men. Well-educated people with high incomes also tend to be Internet users (UCLA Internet Report 2001). People who have home email access are also more likely to be married or cohabiting (Stafford, Kline & Dimmick 1999). Being young, male, well-educated, well-paid, and romantically involved make one more likely to be a frequent Internet user.

How does one make a friend online? Similarly to how one makes a friend in real life; several factors inherent to real-life relationship formation are also relevant to online friendships (McKenna & Bargh 2000, Wallace 1999). Propinquity, or "spatial proximity," is a key factor in relationship formation; people tend to befriend those who live or work near them (Festinger, Schachter & Back 1950, Newcomb 1961). On the Internet, the conventional definition of propinquity no longer applies; people talking in the same chat room can reside on different continents (McKenna & Bargh 2000; Wallace 1999). The Internet has been described as "hyper-personal" (Walther 1996), meaning that self-disclosure, a relationship building practice in which people reveal information about themselves to others, occurs to a greater degree than if people were interacting face-to-face. People seem more willing to share their thoughts or feelings under the protection of anonymity, thus promoting intimacy. Humor,

which helps individuals make friends in real-life, must be used with care on the Internet. Real-life utterances are accompanied by facial expressions that provide a context to aid interpretation. Without this context, online jokes or attempts at sarcasm may seem more harsh or critical than intended (Wallace 1999), although many Internet users employ "emoticons," or typed facial expressions, to supply the context.

In some instances, factors inherent to real-life relationship formation are irrelevant on the Internet, which can be a refreshing change. For example, physical attractiveness is a key factor in face-to-face relationship formation; people want to befriend those who are more physically attractive (Berscheid & Walster 1974; Hatfield & Sprecher 1986). On the Internet, people do not know what their online friends look like, at least initially. Other information must be used in forging the friendship, such as similar opinions or shared hobbies. McKenna and Bargh (1999) conducted a study where participants met another person for the first time either online or in person. Participants who met online liked each other more than those who met in person. The participants who met in person were most likely judging or stereotyping their partners based on physical appearance, which prevented interpersonal connections from forming. The Internet redefines propinquity, increases self-disclosure and de-emphasizes physical attractiveness, facilitating friendships that may not have formed if the partners had met in real life.

Some claim, however, that making friends online costs people in terms of their real-life social interactions. More frequent use of the Internet has been linked to decreases in contact with friends and family (Nie & Erbring 2000), and corresponding increases in depression and loneliness (Kraut & al. 1998). Morahan-Martin (1999) proposed two hypotheses to account for the link between Internet use and loneliness. The first hypothesis suggests that time spent on the Internet leaves less time for face-to-face social activity. Common sense would indicate that, due to the inelasticity of time, those who are often online used to spend that time doing other things, including interacting with friends and family offline (Nie 2001). The second hypothesis reverses the direction of causality, suggesting that lonely people choose to interact via the Internet more often than people who are not lonely. Specifically, the Internet entices

lonely people because the anonymity allows them to feel safe, and the opportunity to carefully craft their responses provides a greater sense of control (Mckenna & Bargh 2000; Walther & Burgoon 1992). It is also possible that both processes work simultaneously. Increased Internet use could cause people to temporarily feel lonelier, as time previously spent with real-life friends and relatives is now spent online. If Internet users cope with their sense of loneliness by increasing time spent online even more, a spiral into more long-term social isolation may occur (Morahan-Martin 1999).

Other research suggests that Internet use does not decrease social interaction. One report showed that ninety percent of Internet users said having access to the Internet did not affect the amount of time spent with family, and that Internet users have just as many real-life friends as non-users (UCLA Internet Report 2001). Some scoff at the notion that Internet use could be harmful to real-life personal relationships, citing the ability of email to enhance communication between friends and family members (PEW Internet and American Life Project 2000). The controversy over the loneliness-Internet use link is sure to continue.

Regardless of whether or not using the Internet causes loneliness, people do make friends online. Some previous research has examined some important factors in forming online friendships. Parks and Floyd (1996) found that among newsgroup users, women (72.2%) were more likely than men (54.5%) to develop personal relationships in cyberspace. Parks and Roberts (1998) found that nearly all respondents (93.6%) reported forming at least one personal relationship online, and that the likelihood of such relationships was unrelated to demographic characteristics of the respondent. The current research measures demographic and personality variables to explore which types of people are most likely to make friends over the Internet.

2. Method and Results

We conducted a survey of 857 undergraduate students at a large Midwestern U.S. university. Their mean age was 19.5 years. Forty-one

percent of the students were male and 11% were members of ethnic minority groups. All students were enrolled in an introductory psychology class and participated in the survey in exchange for course credit. Participants had access to computers with high-speed Internet connections throughout campus. The survey included questionnaires assessing demographic (i.e., age, sex, and race) and personality characteristics.

Self-esteem was measured using the Rosenberg Self-Esteem Scale (Rosenberg 1965), which is comprised of five positively-stated and five negatively-stated items. An example of a positively-stated item is, "I feel that I am a person of worth, at least on an equal basis with others". An example of a negatively-stated item is, "I feel I do not have much to be proud of". This scale has been found to be a reliable measure of self-esteem (coefficient alpha = 0.77; Robinson, Shaver & Wrightsman 1991).

Loneliness was assessed using four questions selected from the UCLA Loneliness Scale (Version 3; Russell 1996). The full measure has been used with a variety of populations, including college students, nurses, older adults, and public schoolteachers. Selected items included: "I often feel isolated from others," and "I feel part of a group". Coefficient alpha was 0.67 for this four-item version of the scale (Russell 1996).

Shyness was measured using five items from the Social Reticence Scale developed by Jones and Russell (1982). The authors define shyness as a constellation of attitudes and feelings that interfere with an individual's ability to effectively relate to others and to function in social situations. Examples of the items included, "I frequently have difficulty meeting new people" and "Basically I am a shy person." The five-item subset was reliable (coefficient alpha = 0.85).

Neuroticism and extraversion were assessed with subscales of the NEO-FFI created by Costa and McCrae (1992). These two scales consist of 24 out of the 60 items on the NEO-FFI. Some examples of the questions are: "I am seldom sad or depressed", "I like to be where the action is," and "I am not a worrier". In our sample, the reliability of the neuroticism and extraversion scales were 0.79 and 0.75, respectively.

In addition, information was collected about the frequency of Internet use. Specifically, participants indicated on a scale of one to ten how frequently they used the Internet, spent time chatting on the Internet, spent time on the Internet for school or work, and spent time on the Internet for fun. Students were also asked to indicate how many friends they had made online.

Participants' mean scores on all the measures, as well as their standard deviations and range, are reported in Table 1. Ninety-nine percent of our participants reported using the Internet. On average, the students indicated that they used the Internet 2-3 times per week; nearly half of the students (49%) reported using the Internet daily. Approximately half of the students (52%) reported having visited chat rooms on the Internet. Nearly all of the students (95%) reported performing work or schoolwork on the Internet during a typical week. Similarly, nearly all of the students (92%) reported spending time on the Internet for fun. Approximately a quarter of the students (24%) reported making at least one friend over the Internet.

Table 2 presents correlations between measures of Internet use and the demographic and personality measures. A series of multiple regression analyses was conducted to evaluate the ability of the demographic and personality variables to predict use of the Internet. Gender was a significant determining characteristic: males used the Internet more often than females in general, visited chat rooms more often, and used the Internet for fun more often. Minority students also used the Internet for fun more often than non-minority students. Shy students reported visiting chat rooms more often and using the Internet for fun more often than non-shy students. Finally, lonely students reported using the Internet more often for work. However, it is important to note that the proportion of variance in the four Internet use variables accounted for by the individual and personality characteristics was quite small, ranging between three and six percent. Although being male, shy, a minority student and lonely predicted Internet use, these variables explained just a small portion of the variance in this variable. Other variables may play a greater role in accounting for how often people use the Internet.

These findings suggest that the measures of the individual student characteristics may serve as determinants of Internet usage, which in turn may lead to the formation of friendships over the Internet. To examine the fit of this model to the data, a structural equation modeling analysis was conducted using the LISREL 8 program (Joreskog & Sorbom 1996). Due to the dichotomous nature of the measure of Internet friendships, this analysis was conducted based on the polychoric and polyserial correlations among the variables; these correlations are presented in Table 3 (the initial model that was tested can be found in Figure 1 and the trimmed version of the model eliminating non-significant paths can be found in Figure 2). In order to derive correct estimates of the standard errors of the parameters and the overall fit of the model, analyses were conducted using the weighted least squares procedure (see discussion by Bollen 1989).

All four measures of Internet use (how often the Internet is used in general, to chat, for school and work, and for fun) were significant direct predictors of having made an online friend, whereas neuroticism was the only personality variable directly related to having made a friend over the Internet. The Internet use variables and neuroticism collectively accounted for 47% of the variation in the likelihood of having established an Internet friendship. Gender, shyness, loneliness, and extraversion were not significant direct predictors of having made an online friend.

However, the model also suggests that characteristics of the individual student may have indirect effects on making friends over the Internet, through their influence on use of the Internet. Tests of the significance of the indirect effects indicated that being male, a minority student, and shy all had significant indirect effects on the formation of friendships over the Internet. These students demonstrated Internet use patterns that increase their likelihood of making a friend online.

3. Discussion

Not surprisingly, frequent use of the Internet, particularly in terms of visiting chat rooms and using the Internet to have fun, directly predicted having made a friend over the Internet. The more students use the Internet, the more they have an opportunity to interact with people online. The Internet “creates a feeling of greater propinquity with others...This ‘electronic propinquity’ might be expected to foster friendships, as actual propinquity is known to do” (Walther & Burgoon 1992 : 56). We found that the more individuals use the Internet for fun and chatting in chat rooms, the more people they meet and the more their Internet-based social network grows.

Neuroticism was the only personality variable that directly predicted having made a friend online. There are several possible explanations for this finding. Perhaps people who are neurotic are shunned by their peers, have smaller real-life social networks, and therefore seek friends via the Internet. Another hypothesis is that individuals high in neuroticism overestimate their closeness with Internet acquaintances and mischaracterize these acquaintances as friends. Identifying why individuals high in neuroticism are more likely to establish friendships online is an interesting avenue for future research.

Contrary to previous research indicating that women make friends over the Internet more frequently than males (Parks & Floyd 1996), our research indicated that men made Internet friends more often. However, Parks and Floyd (1996) examined users of newsgroups, whereas our sample included a more heterogeneous sample of students who used the Internet for school, work, and fun. Also, our finding that men used the Internet more frequently than women is in accord with the literature on gender and Internet use (The UCLA Internet Report 2001; Nie & Erbring 2000).

Minority students used the Internet more than non-minority students, and are consequently more likely to have made a friend on the Internet. Matei and Ball-Rokeach (2001) found that members of certain minority groups (particularly Asians, such as Koreans and

Chinese) were more likely to make Internet friendships than Caucasians. People of various ethnic groups use the Internet to maintain contact with family and friends in their home countries, visit web sites in their native language, and home pages of members of their minority group (Matei & Ball-Rokeach 2001). The Internet can provide a truly international place for people to connect with members of their own culture.

Our results also indicate that the Internet provides a mechanism for individuals who are shy or highly anxious to expand their social network. Shy individuals feel sufficiently confident to visit chat rooms, which enables them to meet other people with whom they may develop friendships. Perhaps the safety of anonymity and the increased personal control of the Internet helps shy individuals more easily express themselves online. Roberts, Smith and Pollock (2000) found that shy individuals felt more confident online than offline. They also found that, six months after beginning to use the Internet, shy individuals felt more confident in offline settings as well. Our findings support the idea that shy people may benefit from developing their social skills online, in a less scary and more controlled environment, and then transferring their new skills to real-life settings.

People often meet others online, establish friendships, and then use other modes of communication to enrich these friendships. The UCLA Internet Report found that 12.4% of Internet users made an online friend whom they later met in real life. A study of people who use newsgroups estimated that nearly all the Internet friends in their study spoke via direct email, and a third of the dyads met in real life (Parks & Floyd 1996). In a later study of people who use MOOS (forums where fantasy worlds are often created and characters, emotions and actions are described with text), 41% of participants exchanged photographs and 67% of participants with online friends spoke to them on the telephone (Parks & Roberts 1998). Online friends can become members of an Internet user's real-life social network.

Online friendships are neither superficial nor trivial. Over 80% of the people with Internet friends communicate with them at least weekly (Parks & Floyd 1996). Internet friendships lack some of the trademarks

of highly developed real-life friendships, such as personalized ways of speaking and meeting other members of the friend's social network. However, other features of these friendships, such as depth and breadth of communication, fare well on the Internet (Parks & Floyd 1996). Parks and Roberts (1998) found that people spend an average of 7.2 hours per week with their online friends, who are typically members of the opposite sex. Although online friendships are not identical to friendships in real life, they are similar in some important ways that suggest that such friendships should be valued and respected.

Internet use may play a more crucial role in forging social links for vulnerable populations. Individuals who are isolated because of geography, age, illness or other circumstances can find solace in communicating with people similar to themselves all over the world (Clark 1998). People with marginalized identities (e.g. due to endorsing unpopular political views or belonging to a sexual minority) may be unwilling or unable to seek friends with similar characteristics. Disclosing such identities in real life could result in stigma, but the Internet allows such people to find similar others and communicate with them, creating bonds for people who desperately need them (McKenna & Bargh 1999). It has been shown that on-line interaction provides people with the opportunity to explore expressive aspects of themselves (Reid 1998). Some people report feeling like their "ideal selves" when interacting online and wish they could feel as authentic in real life social situations (Morahan-Martin 1999).

The findings of Park and colleagues seem to contradict other research indicating that the Internet use results in social isolation (e.g., Kraut et al., 1998; Nie & Erbring 2000). Our findings also suggest that Internet use expands online social networks. Our data also indicate, however, that higher levels of loneliness are associated with frequent use of the Internet for work or school. The critical factor may be *how* the Internet is used. If one is using the Internet for recreational activities, then loneliness may not result. However, if one is using the Internet for work-related activities, loneliness may be a consequence. Simply spending time on the Internet may not fully explain subsequent loneliness, especially in college samples. Future studies that carefully examine not just how often people use the

Internet but for what purposes they are using the technology could clarify these apparently contradictory effects.

Several limitations of our study should be noted. Our sample was comprised entirely of college undergraduates, clearly not representative of the general population. As students at a large state university, every participant had free and unlimited access to the Internet. Much has been written about the digital divide, the phenomenon that impoverished people and minority group members have less access to the Internet than others. The digital divide is much narrower at a large university; on most large college campuses, computer labs with free Internet access are open twenty-four hours a day and are equally accessible to all students. Our findings should only be generalized to non-student populations with extreme caution.

Limitations of the modeling analyses that were conducted should also be noted. First, the data were drawn from a cross-sectional sample; it is important to examine whether or not the same relationships among demographic characteristics, personality variables, Internet use, and the development of Internet friendships are found over time. Second, the trimmed model that we found to fit the data from this sample needs to be replicated in a new sample before one can be confident of the results. Such a model may capitalize on chance characteristics of the present sample, and therefore not be replicable.

4. Conclusion

What do our results say about the erosion of the social link in economically advanced countries? The conclusions are mixed. It is possible that the Internet helps people who have trouble making friends in other ways, including shy or neurotic individuals, members of minority groups, or people with marginalized identities. These people can use the Internet to make online friends, and these online friends may become real life friends. The skills they acquire in making online friends may transfer and help in establishing offline friendships as well.

Our research does add a voice to the debate about Internet use and social isolation. Cross-sectional research, in which all data are collected at only one time point, will never be the best way to address such a question. On the other hand, we failed to find a significant correlation between general Internet use and loneliness. If the two variables are related, a significant correlation should exist. Also, our data suggest an interesting new perspective on Internet use and social isolation. Perhaps the link can be explained by people using the Internet more for school and work rather than social interaction, suggesting the burdens of school and work may be the true cause of loneliness, not Internet use.

Nevertheless, the digital divide cannot be ignored. One way Internet use contributes to the erosion of the social link is that people who are young, well-educated, and affluent reap the Internet's interpersonal benefits whereas less advantaged others do not. Our sample (and any sample of a college population) will have a narrower digital divide than society at large, but we must be aware of its existence. Not only are the underprivileged and underserved members of our population missing out on the information resources of the Internet, but they also do not reap its social benefits.

5. Bibliography

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6. Appendix

Table 1

Descriptive Statistics for the Measures

<i>Variables</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Range</i>
Loneliness ^a	9.18	2.70	4-16
Social Reticence Scale ^b	11.45	4.65	5-25
NEO-FFI Extraversion	31.73	6.55	9-47
NEO-FFI Neuroticism	21.69	8.06	0-48
Self-Esteem	46.10	8.70	15-70
<u>Internet Questions:</u>			
How often do you use the Internet?	6.96	1.43	1-8
How often do you 'chat' on the Internet?	3.01	2.56	1-8
How many hours a week do you spend doing work on the Internet?	3.46	2.06	1-10
How many hours a week do you spend having fun on the Internet?	3.78	2.51	1-10
How many friends have you made over the Internet?	1.88	2.02	1-10

^aFour-item version of the UCLA Loneliness Scale (Version 3).

^bFive-item version of the Social Reticence Scale.

Table 2

Correlations Between Measures of Internet Usage and Predictor Variables

<i>Variable</i>	<i>Internet Use</i>	<i>Chat</i>	<i>School/Work</i>	<i>Fun</i>
Age	-.04	-.06	.06	.02
Male	.19***	.13***	.06	.19***
Minority	.01	.03	.00	.07*
Self-Esteem	-.02	-.06	-.05	-.02
Shyness	.05	.10**	-.03	.10**
Loneliness	-.03	.03	.09*	.08*
Extraversion	-.02	-.02	.03	-.07*
Neuroticism	.00	.06	.01	.02

Note: Pearson product-moment correlations are reported, with the exception of the two dichotomous variables (i.e., male and minority); for those variables, point-biserial correlations were computed.

**p < .05.*

***p < .01.*

****p < .001.*

Table 3

Polychoric Correlations Among the Measures

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Age	1.00												
2 Male	.12	1.00											
3 Minority	.25	.13	1.00										
4 Self Esteem	.06	-.06	.00	1.00									
5 Shyness	.04	.17	-.02	-.13	1.00								
6 Loneliness	.10	.10	.08	.37	.24	1.00							
7 Extraversion	-.14	-.21	-.06	-.11	-.48	-.41	1.00						
8 Neuroticism	-.02	-.13	-.04	-.02	.34	.33	-.27	1.00					
9 Internet Use	-.04	.26	.00	-.03	.05	-.03	-.01	.00	1.00				
10 Chat Room	-.05	.16	.04	-.05	.09	.03	-.02	.06	.31	1.00			
11 Work	.07	.09	.01	-.04	-.04	.10	.03	.02	.35	.21	1.00		
12 Fun	.03	.26	.13	.00	.10	.08	-.07	.03	.45	.51	.35	1.00	
13 Friend	-.03	.13	.08	-.07	.10	.10	-.01	.11	.31	.67	.25	.50	1.00

Note. Correlations of .08 or higher in magnitude are statistically significant, $p < .05$.

Figure Captions

Figure1: Relations among individual characteristics, Internet usage, and development of friendships over the Internet

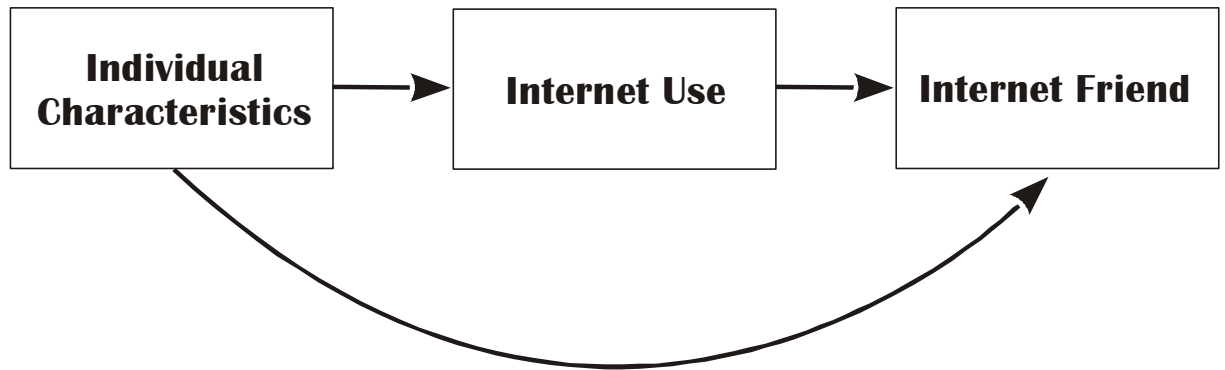


Figure 2: Results for the “trimmed” model

