SCIENCE BRIEFS

The Social Impact of Internet Use

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Psychologists have long studied how people's communication context changes social relationships. Classic studies by Festinger, Schachter and Back (1950) and Newcomb (1961) examined how people's physical proximity influenced their communication patterns and friendships. The Internet opens new options for communication that may challenge our understanding of how communication shapes social relationships. We have been studying the influence of Internet use on social relationships since 1995 (Kraut, Scherlis, Mukhopadhyay, Manning, & Kiesler, 1996).

Over 60% of U.S. households now have a personal computer and over 50% have Internet access (U. S. Department of Commerce, 2002). Although people use the Internet for many purposes, interpersonal communication is probably the most important, in the sense that it is most popular (e.g., Horrigan & Rainie, 2001) and drives other Internet use (Kraut, Mukhopadhyay, Szczypula, Kiesler, & Scherlis, 1999).

Because interpersonal communication dominates Internet use, using the Internet could have positive social impact on people's social engagement and on its psychological benefits (e.g., Cohen & Wills, 1985; Diener, Suh, Lucas, & Smith, 1999). Research, however, suggests that online communication is less beneficial than offline communication. For example, communication online is less

interactive than face-to-face or telephone conversation, and it conveys less contextual information per unit of time (Sproull & Kiesler, 1991). Relationships developed or maintained online are slower to develop (Walther, 2002) and weaker than those developed or maintained in more traditional settings (Cummings, Butler, & Kraut, 2002; Parks & Roberts, 1998).

Our approach

Most claims about the social impact of the Internet are based on evidence from cross-sectional surveys that compare Internet users and non-users on such social outcomes as communication with family, community participation, or psychological health (e.g., Katz & Rice, 2002). It is well known, however, that Internet users and non-users differ in their demographic attributes, attitudes, values, and life style (see U. S. Department of Commerce, 2002 for evidence on demographic differences). Statistical controls for pre-existing differences between Internet users and non-users in cross-sectional samples are generally inadequate, because measurement errors cause statistical techniques to under-adjust and because researchers fail to include relevant

8

individual differences, such as extraversion.

We have adopted a longitudinal approach, examining changes in social variables of interest among comparatively light and heavy Internet users. Measuring the effects of Internet use across time on the same individuals provides natural controls for pre-existing differences. By using statistical growth models (Singer & Willett, 2003), one can identify the attributes of individuals, including their amount and type of Internet use, that predict changes in social engagement and psychological well-being.

Since 1995, we have conducted studies of Internet use. We describe three here. Others can be found at http://homenetresearch.org/progress. We conducted the first project, HomeNet-1, in the early days of residential Internet use. To examine how ordinary Americans would use this then-new technology, we created a field experiment. We gave families Internet access in exchange for observing their online behavior. Much of this early work was descriptive, to understand how people integrated the technology into their lives. In the HomeNet-2 project, in 1998, we recruited a sample that had recently purchased a new home computer. We intended to conduct a true experiment, by randomly providing half of the computer purchasers with free Internet service.

Unfortunately, within six months, 83% of the households assigned to the no-Internet control condition purchased Internet service on their own. As a result, we examined the impact of Internet use through analysis of the longitudinal data. By HomeNet-3, in 2001, we were convinced that how people used the Internet influenced its impact over time. For example, using the Internet to find information might have a different impact than using the Internet for talking with friends and family. We recruited a large U.S. sample, to provide sufficient statistical power to differentiate the effects of specific uses of the Internet.

Internet use, social involvement and psychological well-being
Given the extensive use of the Internet for interpersonal communication, we have been surprised to find that greater use of the Internet doesn't necessarily lead to larger social networks, more social support, better relationships with online partners, or the positive psychological outcomes generally associated with social engagement. For example, in all three studies, compared with people who did not use the Internet at all or used it lightly, people who used the Internet heavily reported larger increases in daily life stress (Holm & Holroyd, 1992; Kanner, 1981). Internal analyses did not reveal a single stressor or source of stress that increased with Internet use. Rather, Internet users appear to experience a diffuse increase in stress. One explanation is that the Internet introduces more activities and social obligations into users' lives, and the increased time pressures add stress to what had been a slower-paced life. Another explanation is that difficult-to-use technology, barrages of information and communication, and other online irritants make users more sensitive to routine events that they could have easily coped with in the past.

Our other findings about the impact of Internet use on social involvement and psychological well-being have been less consistent. Our initial research (Kraut et al., 1998) showed that greater use of the Internet was associated with declines in users' communication with family members, declines in the size of their social circle, and increases in their depression and loneliness. This research led to national news articles with evocative headlines, such as "Researchers Find Sad, Lonely World in Cyberspace." A 3-year follow-up of the same respondents, however, found that most of the negative effects dissipated (Kraut et al., 2002, study 1).

In HomeNet-2 (Kraut et al., 2002, study 2), computer purchasers, after a year, generally experienced positive effects from using the Internet on communication and social involvement—increases in the size of their social circles, face-to-face communication, community involvement, trust in people, and positive affect. At the same time, heavier Internet use was associated with the increases in stress already mentioned and declines in users' knowledge of, and commitment to, their local area. Consistent with a "rich get richer" hypothesis, having more social resources amplified the benefits that people got from using the Internet. Among extraverts, for example, using the Internet was associated with increases in community involvement and self-esteem, and declines in loneliness, negative affect, and time pressure. The reverse trends were found for introverts.

Our most recent national panel study, as yet unpublished, shows a mixed pattern, in which using the Internet for entertainment and information search is associated with different changes in social outcomes than using it for communication with friends and family or for meeting new people online. Overall, people who use the Internet for social purposes are more generally socially engaged offline as well, but their use of the Internet for social purposes, surprisingly, predicts declines in some measures of social engagement.

We continue to examine how people's uses of the Internet and individual differences play a role in the impact the Internet has on them. We believe that a major reason for some changes in our findings over time is that the Internet, the purposes for which it is used, and norms surrounding use are co-evolving. The Internet of today is not the Internet of 1996, and the Internet of tomorrow will not be the Internet of today. For example, the nature of electronic mail changes as more friends and family go online and as more companies send unsolicited advertisements. As these

changes take place, people will find new ways to use this technology, and its social impact will change once again.

Reflections

We originally predicted that because the Internet is a social technology, using it would have effects similar to traditional forms of communication: more social support and less loneliness and stress. For some people, this positive expectation seems to be confirmed. Their social contacts and outcomes are augmented by Internet use. Among people whose Internet use fails to have these beneficial consequences, we believe there are two reasons. First are the activities these users perform online. Not all Internet use is communication, and even communication can be harmful in some circumstances. For example, in our early studies, we witnessed teens from different high schools hurling racial insults and anti-Semitic epithets over electronic mail. Second are opportunity costs. The time people spend online can come at the expense of other, more valuable offline activities. For example, in our early research we saw teens spending hours online chatting with strangers instead of hanging out or playing sports with friends from school.

This behavior was especially likely during the mid-1990s, when only a small fraction of the U.S. population was online and software applications like instant messaging, which links "buddies," were not yet developed. For those teens in 1996, online communication, of itself, was not harmful. Rather it provided fewer benefits than communication with local friends, who, for example, could provide more social support. More generally, online communication may be harmful if it substitutes for more effective ways of being with people. As the technologies for online communication evolve, they will offer new ways for people to substitute or augment their valuable social relationships. Psychologists can discover the choices people make in using the Internet and their

consequences. They can also participate in the design of online communication so that it is socially beneficial. ■

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10