

The quality of online social relationships

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Abstract

People are heavily using the Internet for interpersonal communication. Yet claims about the impact of the Internet on social relationships are controversial. The research summarized in this article compares the quality of online and offline social interaction and relationships. The studies compare bankers' and college students' evaluations of online and offline communication, the quality of social relationships sustained online versus offline among a sample of new Internet users, and the quality of social interaction in listservs, a type of online group. All of these studies suggest that computer-mediated communication, and especially electronic mail, is less valuable for building and sustaining close social relationships than other means, such as face-to-face contact and telephone conversations. The implications of these findings depend, however, on whether the interaction online adds to or substitutes for offline interaction and relationships.

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People are heavily using the Internet for interpersonal communication, sending and receiving electronic mail, contacting friends and family over instant messaging services, visiting chat rooms, and subscribing to distributions-lists. The evidence is clear that interpersonal communication is an important use of the Internet, if not its most important use. For example, both self-report surveys, (e.g., Nie and Lutz, 2000) and computer monitoring studies (Kraut et al. 1999) find that electronic mail was the most popular application people used online.

Claims about the value of the Internet for social relationships, however, are controversial. Both personal testimonials (e.g., Shapirio, 1999) and more systematically collected evidence document the deep and meaningful social relationships people can have with those they meet online (e.g., Parks & Floyd, 1996).

These observations, however, are in tension with data comparing the value that people place on their online relationships versus their offline ones and data comparing social relationships among heavy and light Internet users. For example, Parks and Roberts (1998) surveyed users of multi-player environments called MOOs. Ninety three percent of them had made friends online. However, when asked to compare their online friends with others from their offline life, respondents felt less close to those they met online. Respondents in Nie's (2000) national survey reported spending less time with their friends and family since going online, with the decline greatest for people who used the Internet most. And Kraut et al. (1998) presented longitudinal evidence to demonstrate that, at least among some Internet users, time spent online led to declines in social involvement and psychological well-being.

Understanding the impact of the Internet on people's social relationships requires two types of evidence. First, we need to know how computer-mediated communication affects the quality of particular social interactions and relationships. Are the interactions and relationships sustained online better than, as good as, or inferior to those sustained by other means? Second, we need to know how computer-mediated communication affects one's mix of social interactions and relationships. The impact of the Internet is likely to be very different if it supplements communication with already established friends and family or if, instead, it substitutes for more traditional communication and traditional social ties.

The research summarized in this article addresses the first of these questions by explicitly comparing online and offline social interaction. We briefly summarize evidence from several empirical studies, all of which suggest that computer-mediated communication, and in particular electronic mail, is less valuable for building and sustaining close social relationships than face-to-face contact and telephone conversations. These studies include the following:

- 1) A survey of an international bank where employees described the value of particular communication sessions. Compared to sessions conducted in person or by phone, those conducted by email were perceived as less useful for building or sustaining working relationships.
- 2) A survey of college students, using the same methodology, but focusing on personal relationships, replicated these results.
- 3) A longitudinal study of new Internet users showed that users felt less close to people whom they kept up with by email than those whom they kept up with through face-to-face and phone communication.
- 4) Examination of behavior on email-based listservs showed that these online collectives do not have the communication volume or interactivity, which in traditional small, face-to-face groups sustain social relationships.

Comparing communication over different media

One way to evaluate the usefulness of the Internet for developing and maintaining social ties is to ask people to compare particular communication sessions on relevant outcomes. One can then relate the outcomes to features of the communication session (e.g., who it

was with, how long it lasted, and the modality over which it occurred). This technique has been used to uncover features of conversation that lead to the development of social relationships in face-to-face settings (e.g., Duck, Turr, Hurst, Strejc, 1991). We apply it to communication occurring over email, telephone, and face-to-face among employees in a bank and among students in a university.

In the first of these studies, conducted in 1991, employees of a multi-national bank reported on the most recent communication that they had participated in, over several media. Eighty-one percent of them used electronic mail in their jobs, sending an average of 15 messages per week. As part of a mailed questionnaire, 979 respondents answered questions evaluating the usefulness of communication episodes using criteria related to the success of work groups (McGrath, 1984), including (a) usefulness for getting work done and (b) usefulness for developing or sustaining a work relationship. They made their judgements on 3-point scales, where 1 meant not very useful and 3 meant very useful. For the purposes of this article, we focus just on 5205 communication episodes that occurred in person, by telephone, or by electronic mail. (See Kraut and Attewell, 1996 for more details about this research.)

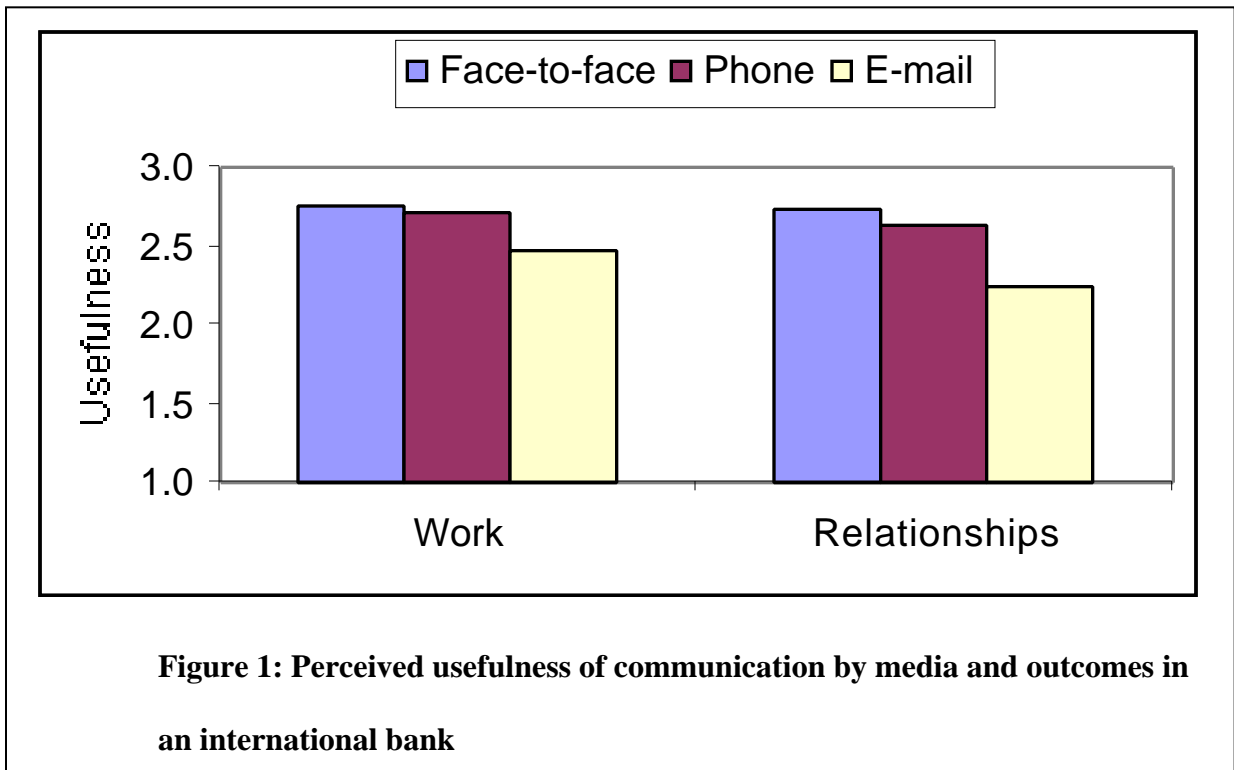
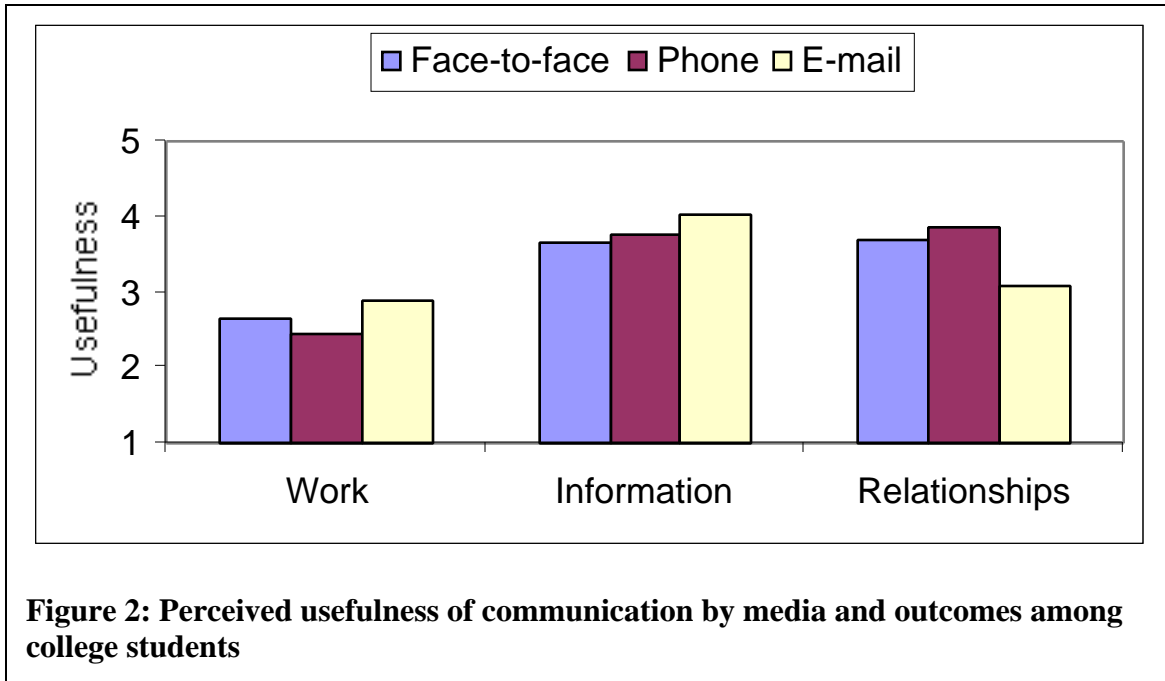


Figure 1 compares the value of conversations held over each media for the two measures of success. Respondents reported communication by email to be reliably worse than communication conducted by telephone or face-to-face, both for getting work done and for sustaining work relationships. However, the disadvantages of email were significantly greater for maintaining relationships than for getting work done. These differences among the media remain even when one statistically controls for relevant variables, including respondents' gender, age, job title, daily volume of communication, and experience with electronic mail.

One might argue that these data come from the early years of electronic mail, although employees in this firm had been using electronic mail since the mid-1970s. In addition, one might argue that personal relationships are not central to work activity, although many studies of work organizations stress their importance for getting work done. To

counter these objections, we replicated the original study eight years later, among students at an eastern university. These students used electronic mail extensively, estimating a mean of 11 messages per day, and were in a life-stage which stressed the importance of developing personal relationships. Thirty-nine students were asked to complete a diary, in which they recorded information about each of 259 communication episodes they participated in during a four-hour block, in the late afternoon and early evening. Among other information, students recorded their relationship with their communication partner (relative, friend, acquaintance, or other), the duration of the communication, the topic of the conversation (schoolwork, personal, or other), and the modality over which it occurred. As with the banking study, respondents evaluated each communication for its usefulness on several dimensions, including (a) getting work done, (b) exchanging information, and (c) developing or maintaining a personal relationship. In addition, they were asked how good the communication was for exchanging information. They made these evaluations on a 5-point scale, where 1 meant not very useful and a 5 meant very useful.

As with the banking study, students evaluated communication sessions conducted by electronic mail to be worse for maintaining personal relationships than those conducted in person ($p < .05$) and by telephone ($p < .05$), which did not differ from each other (see Figure 2). The students, however, found electronic mail to be as good as the telephone and in-person communication for getting schoolwork done ($p > .10$) and even better than these other modalities for the exchange of information ($p < .05$).



Students also estimated how frequently they communicated with each of the 148 partners over the different modalities and the strength of their relationship to each partner. We created an index of relationship strength, by averaging their answer to two questions: "How close do you feel to this person?" and "How much do you get favors or advice from this person?" ($\alpha=.92$). We used linear regression to predict the strength of the relationship with a partner from frequency of communication with that partner over the different modalities: in-person, phone and email. Frequency of communication across all three modalities was significantly related to the strength of relationship, both directly and once the partner's gender, nature of the relations, length of the relationship, and distance between the parties were controlled for statistically. However, communicating in person (Beta = .36) and by phone (Beta = .27) were both significantly better predictors of a strong relationship than was communication by email (Beta = .15).

Comparing Internet versus non-Internet social partners

In the studies just described, respondents selected communication episodes and partners based on the recency of a communication session. This procedure has the advantage of sampling all potential conversations, but may over-represent social relationships that are not important to the respondents, but are frequent simply because the partners are nearby. The research described in the current section compares the value of using computer-mediated and non computer-mediated communication to keep up with partners with whom the respondents have a substantial amount of communication. The data come from the HomeNet project, a field trial that tracked Internet usage and communication behavior among a sample of 93 households in Pittsburgh, Pennsylvania during their first year or two online (See Kraut, Mukhopadhyay, Szczypula, Kiesler, & Scherlis, (1999) for more details).

Participants answered a series of questions about two individuals with whom they had frequent communication. The first, whom we refer to as the Internet partner, was the individual outside of their household to whom they sent the most electronic mail, as recorded in computer-generated usage logs collected as part of the project. One hundred and eleven respondents answered questions about an Internet partner. The second, whom we refer to as the non-Internet partner, was the person outside of their household whom respondents claimed to have the most frequent communication, in any modality. One hundred and twenty-five respondents answered questions about a non-Internet partner. To allow comparisons between relationships conducted by email and those conducted primarily over other modalities, we limit our analyses here to the 99 respondents who

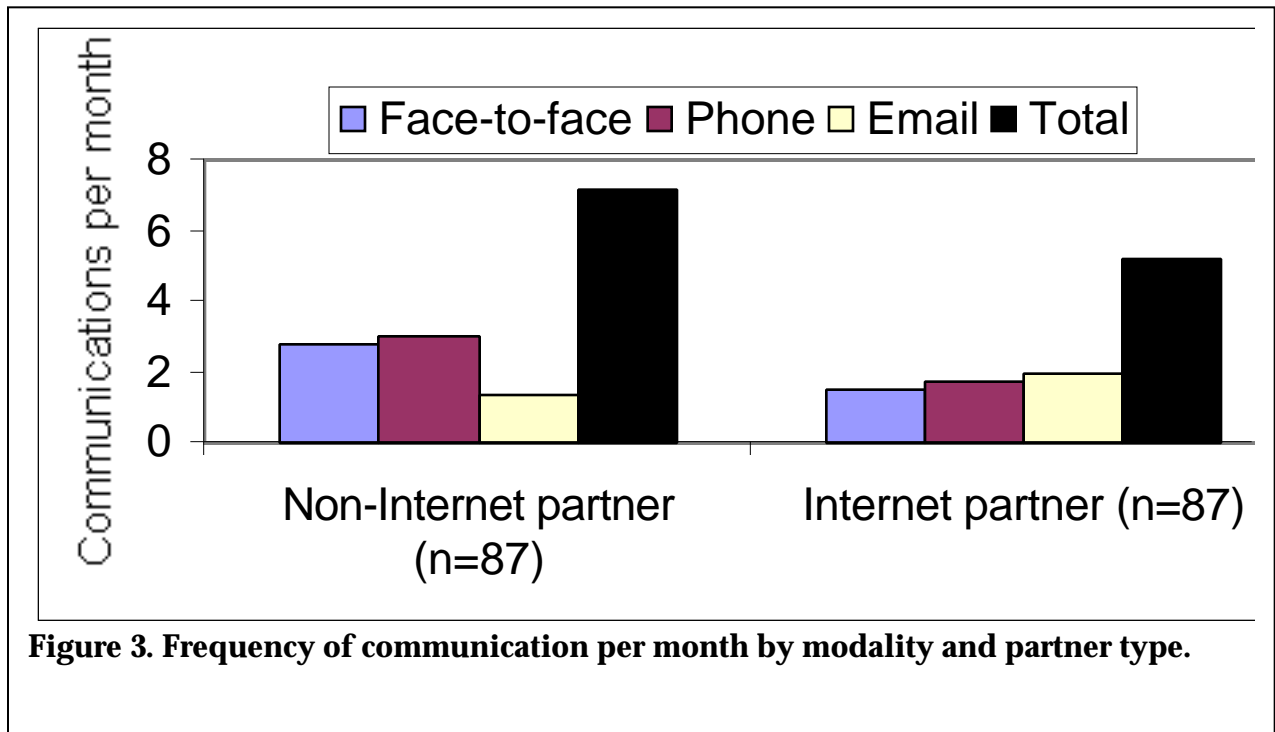
answered questions both about an Internet and a non-Internet partner and for whom these partners were different individuals.

For each partner, respondents indicated the partner's gender and age, duration of acquaintance, role relation (e.g., family, friend, co-worker), and physical proximity (e.g., neighborhood, city, state). Participants then rated their frequency of face-to-face, phone, and email communication with the partner (1-never, 2-less often, 3-monthly, 4-weekly, 5-daily). They also indicated on 5-point scales, how psychologically close they felt to the communication partner (e.g., "I feel very close to this person", "I feel I could confide in this person about almost anything", "This person is important to me", "I understand this person and what he or she is really like" (alpha = .90).

We were interested in three questions. First, do people differ in the volume of communication they have with the people they keep up with using different modalities? Second, do they differ in how close they feel toward them? Third, is communication with a partner over different modalities associated with differing degrees of psychological closeness?

Figure 3 shows the times per month respondents communicated with Internet and non-Internet partners, both broken down by modality and summed over the modalities.

Overall, participants communicated less frequently with their Internet partner (7.2 times per month) than their non-Internet partner (5.2 times per month, $p < .001$). Although they communicated more by email with their Internet partner ($p < .001$) they communicated



less using the other modalities ($p < .001$ for face-to-face and $p < .001$ for phone communication).

Respondents also reported feeling less close to their Internet partner than to their non-Internet partner ($p < .001$).

Our final question asked whether frequency of communication predicted psychological closeness differently for the two types of partners. Using a least squares regression analysis, we predicted psychological closeness from frequency of communication for the non-Internet partner and Internet partner, controlling for sex, age, duration of acquaintance, role relation, and physical proximity. The important result is that frequency of communication was a significant predictor of psychological closeness with the non-Internet partner (Beta = .40) but not with the Internet partner (Beta = -.08). The

difference is statistically significant ($p < .001$). The weaker association of communication with closeness for the Internet sample is analogous to findings reported previously for the student sample.

This research suggests that the nature of social relationships differ on and off the Internet. Online relationships are characterized by less communication and are weaker than offline relationships. Furthermore, frequency of communication predicted psychological closeness for offline relationships, but not for online ones. Given our cross-sectional data, we cannot tell if communication does not lead to closeness when people are communicating electronically or if people are sending electronic mail to people to whom they do not feel close. In either case, by using email they are not getting as much social benefit as they could from their communication activity.

Online social groups

The research we have just described concentrates on dyadic relationships, between individuals in their online and offline lives. Yet one of the prominent features of the Internet is the presence of larger social collectives, which researchers have called electronic groups or communities. Even before the advent of the World Wide Web, the Internet provided an infrastructure for online group-level, social behavior, through USENET and email-based distribution-lists. In descriptions of social life on the Internet these electronic or virtual communities are often described as groups where relationships form, and whose members provide each other with companionship, information, and social support (Sproull & Faraj, 1997).

However, while the existing studies and stories of electronic groups provide insight into the types of social activity that *can* occur in electronic collectives, the anecdotal nature of this research leaves open the question of what *typically* happens. Are active, tightly knit electronic groups, in which people form personal relationships and develop a sense of belonging, the norm or are the cases reported in the literature interesting exceptions? To examine this question, we collected data from a sample of 204 Internet listservs, a type of electronic collective that utilizes e-mail for group communication. The data shows that, on average, listservs are much more like voluntary organizations than the tightly knit social communities highlighted in prior case studies.

The sample consisted of 204 unmanaged and unmoderated e-mail based listservs, drawn from a population of approximately 70,000 listservs. An initial sample of 1066 was stratified by topic type (work-related, personal, and mixed) to ensure that it included a range of topics and member populations. Listservs were dropped from the initial sample if the list owner declined to participate in the study (21%), the listserv was defunct (16%), it had closed membership, generally as part of an organization, course, or taskforce (15%), or it could not provide membership data in an automated fashion. The final sample consisted of lists approximately evenly divided among those oriented around professional, personal, and academic topics. Based on descriptions of the lists, we were able to classify them as purely electronic or as hybrid ones, combining both electronic communication and communication over traditional media, especially conventional face-to-face meetings. For example, a national list on youth hockey was judged as purely

electronic, while the mailing list for a city-specific country dancers' group was judged as hybrid. (See Butler, 1999 for more details).

For a 130 day period, between July 23, 1997 and November 30, 1997, we collected data on each listserv's membership and communication activity. Membership was characterized in terms of size (number of members), growth (members entering during the observation period as a percentage of initial size), loss (members leaving during the observation period as a percentage of initial size) and net change in size (as a percentage of initial size). Communication activity was measured in terms of volume (number of messages per day) and interactivity (length of discussion threads). In addition, measures of member participation (percentage of members contributing messages and the concentration of message contributions among the active participants) were created for each listserv.

Figures 4a-d, respectively, show the distribution of the number of subscribers, the proportion of all subscribers who posted a least one message during the 130 day observation period, the daily number of messages per listserv, and the average number of messages per discussion thread. Table 1 provides analogous information in tabular form, and contrasts the purely electronic with the hybrid lists.

These statistics show listservs are not like traditional small groups. They have large, fluctuating memberships in which a small core of active participants generates relatively low levels of sporadic communication. Their messages are rarely responded to. Small

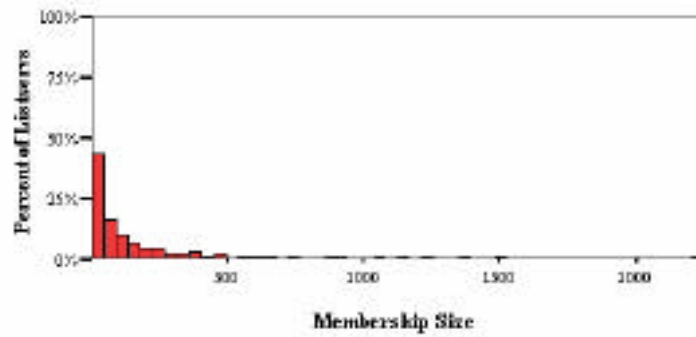
groups, as described in the social psychological research literature (e.g., McGrath, 1984) have between 3 and 15 members, with relatively low turnover. By comparison, the listservs were much larger (median of 64 members), with high churn (22% of original members dropping out annually and double this number joining). In contrast to highly interactive conversation involving almost all group members, typical of small groups, listservs have very little communication. Fully 33% of the listservs had no communication during the 130 day observation period. Of those that did, the median one had 0.28 messages per day (or less than .0004 messages per subscriber). Over 50% of members contributed no messages over the 130 day observation period, and a small number generated most of the messages. Conversation was not interactive. On average, fewer than one message out of three initial posted messages received *any* response.

The hybrid groups were not much different from the purely electronic groups on most of these dimensions. They were significantly smaller, probably reflecting the more limited geographic area from which they could attract members. However, the two types of groups had similar high turnover, low volume of messages, low level of interactivity, and domination by a small proportion of their membership. Regardless of how the hybrid groups acted when they met face-to-face, they acted like typical "weak-tie" collectives online.

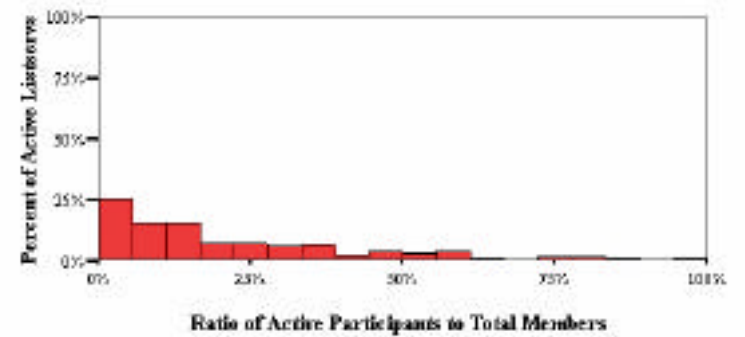
In terms of membership size and change, communication volume and structure, and participation levels, Internet listservs do not appear to be intimate social groups. These findings highlight a bias in prior research on online social activity. While the goal of

establishing the existence of true social behaviors in online environments have been well served by focusing on highly active and interactive examples of electronic collectives, these cases are not representative of what typically happens. For example, interactivity is a common theme in many descriptions of online social activity (e.g. Baym, 1995). However, our results imply that while interactivity can occur in these contexts, it is the exception, not the norm, when it occurs.

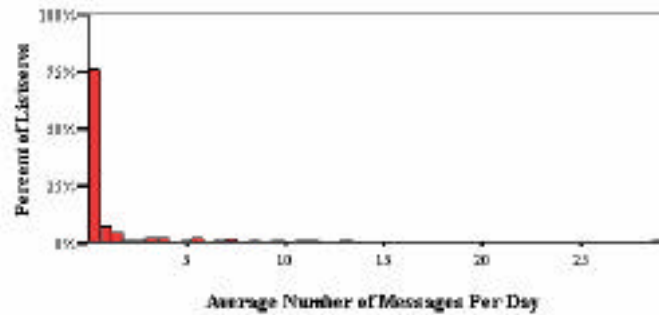
It was not the case that all listservs in this sample had impoverished social behavior, although this was the norm. Nor is it necessarily the case that all types of electronic collectives will look like listservs, in terms of the quality of their social behavior. MUDs, MOOs, and Internet Relay Chat are highly interactive, at least among those who actively participate. As is the case with asynchronous media, however, research studying these phenomena has focused on “interesting” cases (i.e., active ones). As a result, we know little about typical behavior in synchronic electronic collectives.



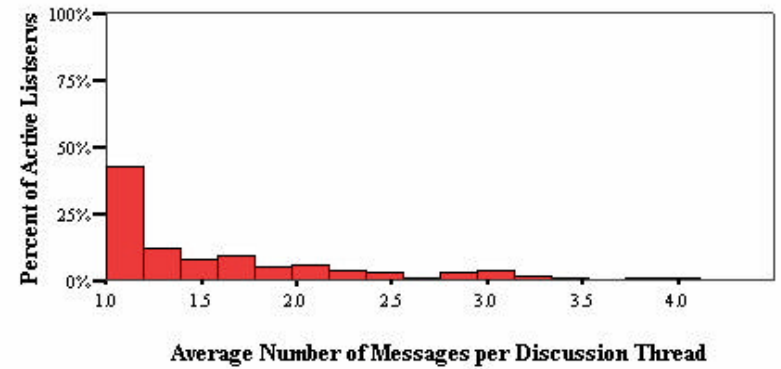
A. (N = 204 groups)



B. (N= 139 groups)



C. (N= 204 groups)



D. (N= 139 groups)

Figure 4: The distribution of Listservs in membership, and participation ratio, message volume, and discussion length.

Variable	Measure	Mean Overall	Median Overall	Median Pure Electronic Lists	Median Hybrid Lists	Difference Pure Hybrid
Size	# of members at start of observation period	163	64	91	34	***
Growth	Members entering during 130 day observation period as percentage of initial size	23%	15%	14.8	16.7	
Loss	Members leaving during 130 day observation period as percentage of initial size	13%	8%	8.1%	8.1%	
Change	Net change in size as percentage of initial size	9%	4%	4%	2%	
Volume ^A	Average number of messages per day	1.650	0.28	.24	.38	
Interactivity	Average discussion thread length. Thread length of 1 indicates the originating message	1.580	1.33	1.61	1.50	
Member Participation	% of members who contributed messages during the observation period	22%	15%	15%	19%	

Table 1: Population Characteristics for Internet Listservs

N = 204 listservs

*** p<.001

^A 33% of the sampled groups had no activity during the observation period. The reported data is from the active groups.

There are clearly cases of both synchronous and asynchronous electronic collectives that support the formation of substantial personal relationships and the development of group identity. On the other hand, these types of social activity seem unlikely to regularly occur in the 'typical' listserv where turnover is high and communication activity is low, non-interactive, and the result of contributions by a small percentage of the membership. This suggests that social "places" on the Internet where close personal relationships form and are maintained are rare.

Conclusions

In this paper, we examined some typical uses of the Internet for social relationships. We have demonstrated that social interaction online is wanting, at least when it is explicitly compared to the standards of telephone calls and face-to-face communication, to social relationships which are primarily conducted offline, and to traditional small groups. We are not saying that online social interaction has little value. Surveys of the general public continually reveal that most people using the Internet value electronic mail and other forms of online social interaction. Even in the age of the Web and electronic commerce, online social interaction is still the most important use of the Internet (Kraut et al, 1999). However, in one-to-one comparisons, an email message is not as good as a phone call or a face-to-face meeting for developing and sustaining social relationships. Listservs are not as good as small groups for establishing a sense of identity and belonging and for gaining social support. Relationships sustained primarily over the Internet are not as close as those sustained by other means.

Should these observations be a source of concern? To answer this question, we need additional information currently not available. Our data has suggested that the Internet is less effective than other means of forming and sustaining strong social relationships. The consequences of using the Internet for social relations, however, depend not only on the quality of the relationship sustained using it, but on opportunity costs as well. Do less-effective email messages substitute for or supplement phone conversations and personal visits? Do weak social relationships formed online add to ones total stock of social relations or substitute for a more valuable partner? Does the time people spend reading

listservs and participating in Muds add to their social interaction or substitute for time they would have spent in real-world groups? Only by examining people's full set of social behavior and examining their full inventory of social ties can we assess the net social impact of online social relationships.

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