

Chapter 6

Prosocial behavior on the net

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Introduction

Subject: Thank you!
Date: Wed, 27 Nov 2002 17:55:49-0500
From: John <JohnDoe@here.net>
Reply To: XXXX@PEACH.EASE.LSOFT.COM
To: XXXX@PEACH.EASE.LSOFT.COM

I am fast approaching the fifth year of my subscription to this listserv. I cannot begin to know how to count the number of hours and the amount of frustration I would have suffered had it not been for the generosity of members of this group.

I thank God that He allowed me to find and use the resources of this listserv. To each of the members here, I want to say to you, 'Thank you for being here and for contributing to me and to others in need'.

Thank you and God bless
John

This message was posted the day before U.S. Thanksgiving Day to an online technical support group. It references one of the most striking social aspects of the Internet, which is that every day, hundreds of thousands of people voluntarily help one another on the net with no expectation of direct reward. Moreover, the helpers and those they help usually have never met face to face. Yet the help is consequential and people are enormously grateful for it, as the message above suggests. This chapter is about the kinds of behavior on the net referenced in the above message—prosocial behavior, defined as 'voluntary intentional behavior that results in benefits for another' (Eisenberg & Miller, 1987).

People voluntarily help one another in many ways on the net:

- ◆ They donate funds to worthy causes through charitable organizations online.
- ◆ They donate idle computing power from their PCs to help scientists analyze large data files.

- ◆ They contribute software and documentation that they have written to open-source (free) software communities.
- ◆ They donate time and attention to electronic groups organized for socially worthwhile causes, such as electronically mentoring disadvantaged students or making public domain, literature freely available on the web.
- ◆ They contribute time and attention to organize and maintain voluntary online discussion groups.
- ◆ Within voluntary discussion groups, they contribute information and emotional support to one another.

The first two examples above (donating money or unused computing power) illustrate the Internet equivalent of 'checkbook voluntarism', which entails electronically contributing resources with economic value to a worthy cause. Many people use the efficiencies of online financial transaction processing to support charitable giving over the net. In the first month after the World Trade Center attack, for example, more than three million Americans made online financial donations to relief efforts (Rainie & Kalsnes, 2001). Many not-for-profit organizations in the offline world are beginning to explore online fundraising (e.g. <http://www.nonprofits.org/>).¹ People can donate not only money but also other resources with economic value. For example, some people donate unused computing power from their PCs to advance scientific research. They voluntarily download software and scientific data from the net to their PC for processing while their PC would otherwise be idle; results are uploaded to a central server where software performs quality checks and aggregates results. In this way more than four million people have donated processor cycles from their PCs to a deep-space astronomy

¹ As we were writing this chapter, we saw our first instance of someone collecting donations for charity by acquiring sponsors to support the organizer's 'blogging' non-stop for 24 hours (<http://www.blogathon.org>). A blog is short for a 'weblog', the equivalent of a personal diary on the Internet, where people can report on anything ranging from personal news for friends to commentary on various social and political issues. In the summer of 2000, one such blogger decided to see if she could blog for 24 hours, at the rate of one entry every 15 minutes. The marathon was a success, and the blogger decided that if she did it again it would be for a socially worthwhile purpose. Thus, the concept of the 'blogathon'—a blog marathon running non-stop for 24 hours at the rate of one blog every 30 minutes—was born. Sponsors support the blogger and charity of their choice by pledging a fixed amount or hourly rate. In the first charity blogathon, held in 2001, approximately 100 bloggers raised more than \$20 000 for 77 different charities; in 2002, roughly 200 bloggers raised more than \$50 000; in the third annual blogathon in 2003, 401 participants raised \$102 000 from 1312 sponsors. (See <http://www.esztersblog.com/blogathon03> for an example of one volunteer's 24-hour log of blog entries.)

project (<http://setiathome.ssl.berkeley.edu>); additional millions of people have donated processor cycles from their PCs to other scientific projects (see <http://www.aspenleaf.com/distributed/> for examples). Online charitable donation of money or other resources with economic value produces benefits for society, but because it represents arms-length prosocial behavior, we do not consider it further in this chapter. This chapter focuses on people who voluntarily help others through interacting with them directly on the net.

Direct prosocial behavior on the net can be found among friends and family in private e-mail and buddy lists (e.g. see Wellman & Gulia, 1999), among organizational employees behind corporate firewalls in corporate intranets (e.g. Constant *et al.*, 1996), and among people who may be strangers to one another in publicly accessible electronic groups and websites (e.g. Galegher *et al.*, 1998). This chapter focuses on prosocial behavior among people who may be strangers to one another in publicly accessible contexts, for both pragmatic and theoretical reasons. Pragmatically, these contexts are often more accessible to researchers than are private or corporate contexts. Theoretically, they represent an opportunity to understand behavior about which the offline world offers few opportunities for study, namely, social contexts that are organized in such a way that large numbers of strangers voluntarily help one another.

One of the ways to understand prosocial behavior on the net is to compare and contrast it with prosocial behavior in the offline world. Prosocial behavior in the offline world is found in a variety of social contexts. These can be characterized by the strength of the social relationship among participants and the degree of organizational structure of the contexts. Social psychological research on prosocial behavior in the offline world has focused on social contexts with minimal formal organizational structure, either single acts of bystanders helping strangers or ongoing support among people with strong interpersonal bonds such as close friends or relatives (e.g. Bolger *et al.*, 2000; Kiesler *et al.*, 2000; Latané & Darley, 1970; Wellman & Wortley, 1990). Sociological research on prosocial behavior in the offline world has focused on more highly organized social contexts, such as the self-help group and the volunteer organization (e.g. Akera, 2001; Knoke, 1981; Popielarz & McPherson, 1995; Wilson, 2000 for a review). See Table 6.1 for a matrix of voluntary helping contexts studied by researchers in the offline world.

In some ways, prosocial behavior on the net resembles bystanders helping in the offline world. Typically, helpers, and those they help, have no pre-existing face-to-face relationship. Usually there is no expectation of direct reciprocity or even of any ongoing relationship. Requests for help come at random times. At the same time, however, in some ways prosocial behavior on the net

Table 6.1 Matrix of voluntary helping contexts

Degree of organization	Strength of social relationship		
	Strangers	Acquaintances	Close friends and relatives
Unstructured	Bystander helping (e.g. Latané & Darley, 1970)		Ongoing support (e.g. Bolger <i>et al.</i> , 2000; Kiesler <i>et al.</i> , 2000; Latané & Darley, 1970; Wellman & Wortley, 1990) Long-term care (e.g. Brennan <i>et al.</i> , 1995)
Informal or self-organized groups		Self-help and support groups (e.g. Akera, 2001) Neighborhood groups (e.g. Portney & Barry, 1997)	
Formal groups and organizations	Checkbook voluntarism (e.g. Callero <i>et al.</i> , 1987)	Volunteer organizations (e.g. Grube & Piliavin, 2000; Knoke, 1981; Popielarz & McPherson, 1995; Simon <i>et al.</i> , 1998) Organizational citizenship (e.g. Constant <i>et al.</i> , 1996; Perlow & Weeks, 2002; Smith <i>et al.</i> , 1983)	

resembles behavior in voluntary organizations in the offline world. It occurs in organized social contexts in which helping is supported and rewarded. Therefore, this chapter draws upon research from both social psychology and sociology to characterize prosocial behavior on the net.

In the following, there are five sections. Section one characterizes the electronic helping context; section two examines why people engage in prosocial behavior on the net in the light of relevant theoretical perspectives; section three presents evidence of the effects of electronic prosocial behavior; section four offers implications and suggestions for future research; and section five concludes with final comments.

The electronic helping context

Public discussion groups and public collaborative work groups are the settings in which this chapter considers prosocial behavior on the net. Public discussion groups exist for hundreds of thousands of topics: hobbies, entertainment,

social issues, politics, technical support, and health and lifestyle support, among others. These groups are supported by a variety of different technologies: mailing lists or listservs, Usenet groups, bulletin boards, chat rooms, web forums, etc. Each group focuses on a particular discussion topic; anyone who wants to participate in discussing that topic may do so. Public collaborative work groups always have a goal beyond discussion, although discussion is usually an important group component. Some online groups work on scientific projects; some engage in software development; others engage in social projects such as electronic mentoring or electronic proofreading. Anyone who wishes to participate in any of these projects may do so. Opportunities to seek and offer help in all of these contexts are visible, easy, and organized.

Visible opportunities

People can use software tools such as search engines and directory listings to find social contexts where help can be sought or given. These tools make visible many opportunities to seek or give help. Within these social contexts, requests for help are visible to all. Everyone who goes to a public discussion group will see messages that ask for help and discussions that could use help. Everyone who goes to a volunteer work group will see explanations for how and why to help displayed prominently. Helping behaviors in response to requests for help are equally visible. Additionally, many groups retain searchable archives, which means that the history of prior helping behavior in the group can also be visible.

While requests for help are visible, people making the requests are not visible. In the offline world, bystander helping is influenced by the physical appearance of the person needing help. Physically attractive people are more likely to be helped in the offline world than are unattractive people (Athanasίου & Green, 1973; Byrne *et al.*, 1971; Chaiken, 1979; Dommeyer & Ruggiero, 1996; Harrell, 1978; Mims *et al.*, 1975; Piliavin & Piliavin, 1975; West & Brown, 1975; Wilson, 1978). Social similarity also affects helping in the offline world (Eagly & Crowley, 1986; Emswiller *et al.*, 1971; Simon *et al.*, 1998, 2000; Wellman & Wortley, 1990). In the online world, however, people reading a request for help have no information about the requestor's physical appearance or social similarity that is conveyed by visible attributes such as age, gender, or race. In the offline world, one of the impediments to asking for help is the perceived threat to one's public self-image (Karabenick & Knapp, 1988). Physical invisibility may reduce that perceived threat in the online world; so, too, may the use of pseudonyms, screen names, or anonymous postings.

Not only are the people asking for help physically invisible, but so also are the people receiving the request who might potentially offer help. In the

offline world, bystander helping is influenced by the number of other people available to provide help (Latané & Darley, 1970). In the online world, potential helpers are invisible unless they actually offer help. The combination of visible helping contexts and physically invisible potential helpers may make the felt (perceived) need to offer help more prominent. Potential help providers are unaware of how many others online have the ability to provide the help requested. Until one person actually offers help, every potential helper may assume that he or she is the only one who could help. Physical invisibility also reduces the barriers for help providers whose age, gender, race, or other visible attributes lead people to discount their contributions in the offline world, regardless of their actual usefulness. Help provided is not spurned on the basis of physical attributes that are invisible, but can be judged based solely on the content of the help.

Easy opportunities

It is relatively easy to make a contribution to a public discussion group or volunteer work group, including a contribution that asks for help or that offers help to someone in need. People can participate in these contexts at any hour of the day or night from any place with technology and net access. People can read or send messages at their convenience and can fit their contributions into their own time schedule. If they have discretionary net access at work, they can participate during the day in the interstices between work activities, or they can do so from home. The message is the basic unit of contribution behavior: it consumes a rather small unit of time and attention and represents a voluntary micro-contribution to the community. Some people may devote many hours a week to online prosocial activity, but they can do so in small units of time at their own convenience. In one survey of online volunteers, convenience and schedule flexibility were the two most common reasons people cited for choosing to volunteer online (<http://www.serviceleader.org/old/vv/admin/99vols/stats.html>).

Not only is it easy to make a helpful contribution, it is also easy to control the extent of further involvement. In the offline world, a person may hesitate to offer help for fear that a helpful response will lead to further demands on one's time or emotional energy. In the online world, a person offering help may feel in complete control of how much further involvement will ensue; he or she can simply ignore further requests.

Organized opportunities

A combination of software and social norms organizes human behavior in online discussion groups. Someone posts a message containing a question or

request for help and others reply with messages containing answers, comments, or suggestions. Software allows people to indicate that their message is a response to a previous post and lets them display messages as 'threads' (a seed message and all responses to it). Threads organize messages by topic so that everyone can view related messages, making it easy for potential contributors and beneficiaries to see what has already been contributed and where there are opportunities for further contribution. Discussion groups may have tens or hundreds of threads active at any given time, which creates the need for a level of aggregation beyond the self-organizing thread in order to help readers find their way. In these cases, a human designer may suggest or impose a topic map in order to organize contributions into more general topic categories.

A topic common across most electronic groups is the FAQ (frequently asked questions), a compilation of messages about the goals of the group and how to behave in the particular group. The FAQ typically states the group's 'rules of the road' explicitly, including expectations about asking for and providing help and discussions appropriate for each topic category. In addition to the FAQ, the substantive focus of a group usually implies the structure of its topic map. For example, health support groups usually have topics for symptoms, medications and side-effects, negotiating the healthcare system, and managing relationships with family and friends. Within any discussion group, organizing devices like threads, topic maps, and FAQs demonstrate where and how to ask for and provide help.

Volunteer work groups use software that is specialized to the particular group to organize people's contributions. The software typically includes a code that records each person's contribution and that aggregates across contributions. Collaborative software development groups use specialized software to keep track of changes to it. They use bug-tracking systems to keep track of bug reports and bug status. Many types of groups use collaborative authoring software that allows anyone to change a document, and stores a history of those changes. Groups also use software to display contribution totals to the group as a whole and to give contributors feedback on their contributions. Volunteer work groups also typically support organized discussion among their members, using the organizing methods described in the previous paragraph for discussion groups.

We have suggested that the electronic context is one in which helping opportunities are visible, organized, and easy; but convenience is not the only determinant of prosocial behavior. We must ask: Why do people help when they cannot see the potential recipient and so may find it difficult to judge if he or she is worthy? Why do people help when they cannot see other potential helpers and so may find it difficult to judge if their help would be useful?

Why do people help when they have no tangible reminders of the social benefit of their help? The theoretical perspectives of social learning and social identification are useful in answering these questions.

Theoretical perspectives applied to helping in the electronic context

Social learning theory

Social learning theory suggests that prosocial behavior is learned (Bandura, 1977; Bandura & McDonald, 1963; Batson, 1998, for a recent review). Observing role models who are loved or respected, such as parents or authorities, engaged in prosocial behavior, demonstrates how people can and should behave prosocially. Rewards reinforce helping behavior; punishments reduce unhelpful or hurtful behavior. Within a group context, social recognition, not just private reward, increases prosocial behavior (Fisher & Ackerman, 1998). Observational modeling processes with reinforcement will result in learning over time (Compeau & Higgins, 1995; Lim *et al.*, 1997). Although social learning theory was developed within the context of physically co-located actors and observers, it can be applied within the electronic context to the extent that prosocial behavior is observable and socially reinforced in that context.

Public discussion groups and collaborative work groups often explicitly encourage newcomers to read the group for a while before posting their first message. The visibility of behavior on the net insures that everyone who does read a discussion group will see examples of prosocial behavior (i.e. helpful messages). Moreover, they will also see that some of these messages are explicitly recognized as helpful, either by the recipient or by another reader. That is, sometimes a helpful reply to a question receives a thankful reply from the person who asked for help or a message of commendation from another reader. These recognition messages are also visible to everyone and thus constitute social recognition, not just private reward. Social recognition for helpful behavior can go beyond ad hoc public acknowledgment messages. Some groups use software that allows participants to reward helpful messages with recognition points. Points are tallied automatically and the most helpful participants (people whose messages receive the greatest number of recognition points) for a given period of time are publicly acknowledged.

In some volunteer work groups, the quality of the contribution is assessed directly by software; in still other groups, the software lets the recipient of the help, or any other participant, rate the quality of the contribution. In addition to helpful messages, readers will occasionally see unhelpful or erroneous ones. These, too, may engender a visible response in the form of

complaints or negative feedback messages. Visible peer recognition—whether textual or numeric, ad hoc or systematic, positive or negative—is a powerful learning reinforcement mechanism for both direct and vicarious learning. The combination of visible messages with peer feedback suggests that the minimum criteria for learning how to behave prosocially in the electronic context are met.

Social learning theory also suggests that low-cost trials are more effective than high-cost ones in the initial stages of learning. We have noted that the cost of a single micro-contribution is relatively low in the electronic context. Studies of various Internet discussion groups and volunteer work groups have reported a mean message length ranging from 8 to 30 lines of new text (Galegher *et al.*, 1998; Sproull & Faraj, 1995; Wasko & Faraj, 2000; Winzelberg, 1997). They have also reported a mean participation time of 10–20 minutes per session (Boberg *et al.*, 1995; Brennan *et al.*, 1995; Lakhani & von Hippel, 2003). The newcomer to a group can learn vicariously about how to behave prosocially by viewing small demonstrations of it, and can learn directly by making small prosocial contributions and receiving (small, easy-to-make, visible to all) positive reinforcements for doing so.

Motivation to help

Theorists differentiate altruistic prosocial behavior from egoistic prosocial behavior depending upon the motivation of the helper (Batson, 1991; Nelson, 1999; Piliavin & Charng, 1990). Altruistic prosocial behavior is motivated purely by the desire to increase another person's welfare; egoistic prosocial behavior is motivated by the desire to increase one's own welfare or that of one's group or cause through helping others (Batson, 1998; MacIntyre, 1967). Both motivations are likely to be present in ongoing volunteer contexts. Help providers in electronic groups describe having been motivated by empathy, community interest, generalized reciprocity, and the personal return of learning and reputation enhancement (e.g. Butler *et al.*, forthcoming; Lakhani & von Hippel, 2003; Pope, 2001; Wasko & Faraj, 2000). In discussion groups, participants who report being motivated by community or group interest often provide the most valuable contributions (Butler *et al.*, forthcoming; Constant *et al.*, 1996).

In electronic contexts, as in offline ones, a majority of the help is often provided by a minority of the members who incur substantial costs in terms of their own time. Table 6.2 displays participation rates across several different types of online discussion groups and volunteer work groups and demonstrates the unequal nature of participation. Most studies report aggregate participation rates (i.e. they do not differentiate messages that ask for help from

Table 6.2 Inequality in participation with electronic voluntary groups

Participation rate	Total no. of active participants*	Duration of observation	Type of group	Authors
10% of participants contributed 63% of msgs	70	3 month	Eating disorder	Winzelberg (1997)
50% of participants contributed 94% of msgs	33	18 months	Caregivers of people with mental illness	Perron (2002)
9% of participants contributed 27% of msgs	119	3 weeks	Arthritis	Galegher <i>et al.</i> (1998)
14% of participants contributed 38% of msgs	274	3 weeks	Attention deficit disorder	Galegher <i>et al.</i> (1998)
3% of participants contributed 23% of msgs	733	3 weeks	Depression	Galegher <i>et al.</i> (1998)
2% of participants contributed 50% of answers	11 510	4 years	Support for free software	Lakhani & von Hippel (2003)
2% of participants contributed 55% of msgs	13 000	5 years	Creating free software	Moon & Sproull (2002)
63% of people identified craters more than once; 1.9 million crater identifications	>85,000	10 months	Volunteer science: identifying Martian craters	http://clickworkers.arc.nasa.gov/documents/crater-marking.pdf

* People who posted at least one message during the period of observation.

those that offer it). However, because each question or request for help usually receives multiple replies, aggregate rates are more a function of responding (which includes providing help) than initiating (which includes asking for help). Occasional ad hoc positive feedback for a helpful message is probably sufficient to offset the cost to the infrequent helper. However, when people repeatedly respond to individual requests for help or contribute to the group in other ways, even if they do so in small increments, then more systematic recognition, as well as other forms of benefit, will reinforce sustained helping behavior. That is, the greater the cost of the helping behavior, the greater the

need for personal rewards if the helping is to be sustained (Field & Johnson, 1993; Omoto & Snyder, 1995).²

Social identity theory

Social identity theory and self-categorization theory (Tajfel & Turner, 1986; Turner *et al.*, 1987) are helpful in understanding why some people exhibit substantial prosocial behavior over time. Social identity theory is based on the premise that people identify with particular groups in order to enhance their self-esteem. Identification leads to selective social comparisons that emphasize intergroup differences along dimensions that favor the ingroup and confer positive distinctiveness on the ingroup when compared to the salient outgroup (Hogg & Abrams, 1988). Categorizing the self and others in terms of groups accentuates the similarities between group members with respect to their fit with the relevant group prototype or 'cognitive representation of features that describe and prescribe attributes of the group' (Hogg & Terry, 2000). The prototype guides the participants' understanding of the group and its expected behaviors and attitudes. People identified with a group will thus be more likely to exhibit behaviors (and more behaviors) that are consistent with shared group norms and will cooperate with the group and its members.

In a discourse analysis of electronic health support groups, Galegher *et al.* (1998) found that people legitimated their requests for help in their messages by describing their membership in the group and by appealing to the group's shared history. Even frequent posters framed their requests for help in terms that referenced the group. Requests that did not reference the group were much less likely to receive a reply. In a linguistic analysis of discussion groups, Sassenberg (2002) demonstrated that people in cohesive groups exhibited greater linguistic norm conformity than people in ad hoc groups. Thus, in electronic groups, message interactions among participants can both define and express the group norms. Group prototypes are negotiated and redefined through member message interactions (McKenna & Green, 2002; Postmes *et al.*, 2000). In other words, participants collectively define who is an admired member and what is a high-quality contribution through comments and feedback provided in response to member contributions.

In both offline and online contexts, frequent participants are likely to form relational bonds with one another (Lawler *et al.*, 2000), especially if they expect the group to persist over the long term (Chidambaram, 1996; Walther, 2002).

² In some groups, however, the rewards and benefits provided in order to sustain helping behaviors, such as recognition points, can actually reduce contributions to the group by inducing competition rather than cooperation with other participants (Gu & Jarvenpaa, 2003).

In voluntary electronic groups, as people participate over time they become aware of other members who repeatedly provide valuable help. Moon (in progress) suggests that eventually active members will form a sense of community with other core members and become committed to this core subgroup of the larger group. These highly identified volunteers will help other members, not only as a service to those needing help and as a matter of self-interest, but also in order to demonstrate their identification with and commitment to the core group of volunteers who sustain the group as a whole. In a study of volunteer Linux developers, Hertel *et al.* (2003) found that identification with the developers in the Linux subsystem in which the respondent was participating, but not identification with the Linux user community as a whole, was positively related to the number of hours spent on the Linux project.

Group identification is an important antecedent to cooperative behaviors related to group maintenance and survival (Ashforth & Mael, 1989; Kramer, 1993; Mael & Ashforth, 1995; Tyler, 1999). Volunteerism studies in the offline world have generally found that participation in voluntary association management can foster commitment (Simon *et al.*, 1998; Wilson, 2000). In this literature, participation refers to having an active role in the decisions made by the association, and not mere participation by showing up.

A study of 212 voluntary e-mail lists found that the volunteer who maintains a list (often called a list 'owner') spends substantially more time than other members in infrastructure maintenance, social control, and external promotion (Butler *et al.*, forthcoming). Typically, owners take responsibility for such time-consuming work as regular maintenance and upgrades of the technical infrastructure and dealing with problems such as viruses and junk e-mail. Infrastructure administration also involves developing and maintaining components that are unique to the needs of the particular group, such as an up-to-date content archive, ancillary files such as group descriptions and FAQs, and the list of people who have access to the group. Owners also take some responsibility for the social management of listservs. They remind members about the rules and the norms of the group, manage disputes, prevent exploitation of individual members, chastise those who engage in inappropriate behavior, and deny serious offenders access to the group (usually as a last resort). Owners frequently encourage members and membership as well. They promote desirable behavior by recognizing people who contribute especially informative or supporting messages, and those who create interesting or useful group activities.

Social learning processes and social identification processes help explain how prosocial behaviors can be learned and sustained on the net. Social identification processes are instrumental in the group's collective definition of

what constitutes helpful, as opposed to harmful, behavior in the context of the group. Long-term participants identified with the core subgroup, including group owners or founders, are committed to enforcing these group norms. Just as people learn from respected authorities in the offline context, software that makes valued long-term contributors of the group visible and salient facilitates people's learning from members most representative of the respected group prototypical member.

The value of electronic prosocial behavior

Value to beneficiaries

Discussion group members benefit from prosocial behavior and are grateful for it, as the message quoted at the beginning of the chapter illustrates. Even 'lurkers' (people who read group messages but never post them) receive informational benefits from passive participation in electronic discussion groups (e.g. Butler *et al.*, forthcoming; Nonnecke & Preece, 2000a, 2000b; Wasko & Faraj, 2000). Nonnecke and Preece (2000a) estimate that up to 90% of group members never post or do so less than once a month, with software discussion groups exhibiting up to 30% higher lurking than health support groups on average. Because lurkers may constitute a substantial fraction of electronic group membership, benefits to lurkers should not be ignored even if such lurkers are invisible to the group and to researchers. Nevertheless, consonant with research on offline groups and communities, passive participants derive fewer benefits than do active ones (e.g. Callero *et al.*, 1987; Omoto & Snyder, 1995). Passive participants report mostly information benefits; their total level of benefits is lower than that for more active participants; and they are more likely to drop out (Butler *et al.*, forthcoming; Cummings *et al.*, 2002).

There is little systematic research that explicitly examines the impact of electronic prosocial behavior on its recipients. Research generally investigates the impact of actively participating in online discussion groups, especially in support groups. 'Active participation' is measured by the number of posts a person makes, which does not differentiate between posts that ask for help, posts that offer help, and posts unrelated to help. A particularly important point in the process of becoming an active electronic group member is the first time a person posts to a group. Prosocial responses to an initial post may offer information, encouragement, and/or emotional support. If these positive responses occur, they increase the likelihood that the new poster will become more engaged with the group. A study of electronic groups dealing with stigmatized and marginalized identities found that people in these marginalized identity groups whose initial post received more positive than negative responses

were more likely to continue to participate in these groups (McKenna & Bargh, 1998).

Many studies have documented that active participants incur benefits from their voluntary interaction with others. Most studies of members of online discussion groups and volunteer collaborative work groups report that information benefits are important to them (Baym, 1999; Lakhani & von Hippel, 2003; Wasko & Faraj, 2000). Some members also derive the social benefits that can come from interacting with other people: getting to know them, building relationships, making friends, having fun (Baym, 1999; Butler *et al.*, forthcoming; Cummings *et al.*, 2002; Kendall, 2002; Quan y Hasse *et al.*, 2002). Protégés in online mentoring report positive attitudinal and behavioral outcomes (Barsion, 2002; Bennett *et al.*, 1998). Members of medical and psychological support groups may derive health benefits from their participation in addition to information and social benefits. The evidentiary base for health benefits is small, but it comes from studies that use either random assignment or statistical procedures to control for other factors that could influence health status. Health-status benefits for active participants include shorter hospital stays (Gray *et al.*, 2000), decrease in pain and disability (Lorig *et al.*, 2002), decrease in social isolation (Galegher *et al.*, 1998), and increase in self-efficacy and psychological well-being (Cummings *et al.*, 2002; McKenna & Bargh, 1998).

Value to helpers

A few studies have focused specifically on benefits to those who help others. As predicted by social learning theory, people who devote substantial time and attention to helping others report receiving both egoistic and altruistic benefits, but relatively greater altruistic benefits than those who are less involved.

In their study of 212 listservs, Butler *et al.* (forthcoming) found that listserv owners (who spent more time helping the group than did other members) reported receiving different levels and types of benefits compared to other members. They reported lower levels of information benefits and higher levels of prosocial benefits, such as the satisfaction of helping other people and supporting the real world community associated with the listserv's topic. This finding is consistent with the role identity theory, and research by Piliavin and her colleagues who suggest that in-role volunteer activity (i.e. behavior specified by a person's role as a volunteer), encourages an altruistic self-image and commitment to the community (see for example, Callero *et al.*, 1987; Piliavin & Callero, 1991).

A study of people who help others by answering questions in an open-source software support group found that participants derived learning benefits, reputational benefits, and benefits related to advancing the group (Lakhani &

von Hippel, 2003). A study of volunteer programmers found that people who donated the code were more likely to report identification with the software development group, whereas people who merely used the code were more likely to report only egoistic benefits from participation (Hertel *et al.*, 2003). A study of electronic mentoring of college undergraduates found that mentors reported they derived satisfaction from 'helping the next generation move ahead' and insight into their own career experiences (Barsion, 2002). This finding is consistent with research on mentoring in the offline world which finds that those who mentor derive both altruistic and egoistic benefits from so doing (Higgins & Kram, 2001).

Value to society

There is no rigorous empirical evidence for how prosocial behavior on the net might benefit the larger society. Extrapolating from studies that document benefits to individual people, we can speculate on broader social benefits. If members of health and lifestyle groups achieve improved health status, the cost of their medical or psychological care could decrease. (Alternatively, better-informed members may seek additional tests or treatments, thereby increasing the cost of their care.) If members of special populations like schoolteachers, female science students, or senior citizens derive cognitive, social, and emotional benefits from participating in electronic discussion groups, then the larger society may benefit as well. Online volunteer discussion groups, in which people ask and answer questions about open-source software, have received industry awards for providing high-quality help (Foster, 1998, 1999, 2000). All open-source users benefit indirectly from the resulting high-quality software.

Public volunteer work groups suggest most clearly the potential societal benefits that may arise from prosocial behavior on the net. For example, NASA invited net-based volunteers to identify and mark craters on images of Mars in an experiment to see if 'public volunteers (clickworkers), many working for a few minutes here and there and others choosing to work longer, can do some routine science analysis that would normally be done by a scientist or graduate student working for months on end' (<http://clickworkers.arc.nasa.gov/top>). More than 85 000 volunteers marked and classified craters.³ The quality of their work was 'virtually indistinguishable from [that] of a geologist with years of experience in identifying Mars craters' (<http://clickworkers.arc.nasa.gov/documents/crater-marking.pdf>). In another example, Project Gutenberg, whose

³ Every crater was marked an average of 50 times and classified an average of seven times. Thirty-seven percent of the contributions were made by one-time visitors.

goal is to make the world's public domain literature freely available online, relies upon volunteers to scan images of book pages, to proofread electronic pages, and to manage the consolidation and digital archiving of resulting texts. Volunteers proofread more than half a million pages in 2002, resulting in more than 800 books being archived for public access (<http://www.pgdp.net>) in that one year alone. In total, Project Gutenberg volunteers have made more than 6000 books freely available online.

Implications and future research

Prosocial behavior is widespread on the net. Evidence of the consequences of prosocial behavior is beginning to accumulate in studies of the effects of participating in online public discussion groups and volunteer work groups. Yet, as noted above, these studies rarely focus explicitly on prosocial behavior and rarely differentiate receiving help from offering help. Moreover, with few exceptions, studies that have focused on understanding the motivations for helping have not assessed the quality of the help provided. However, the quality of help provided is what determines its value to individual recipients. (See Hoch *et al.*, 1999, for one exception that found that informational help provided in online public medical discussion groups is of comparable quality to expert medical advice.) We should also note that some types of 'helping' behavior on the net, while rare, may be defined by many observers as anti-social rather than prosocial. A stark example of this can be found in volunteer 'pro-ana' (pro-anorexia) online groups, whose members support one another in their 'personal choice' to become dangerously thin. In sum, there is much research to be done at the individual level focusing on the costs and benefits of online prosocial behavior. Similarly, there are opportunities for systematic studies of broader social benefits accruing from prosocial behavior on the net.

Studies of offline helping have found that people help less when they observe more people in the helping context (Latané & Darley, 1970). However, in the electronic context there are no salient cues regarding group size. Both the help-seekers and potential help-providers are invisible. Research on the role of perceived group size could provide a fuller account of some of the situational determinants of helping behavior in the electronic context.

Individual differences affect help-seeking and offering behaviors offline (Nadler & Fisher, 1986). For example, individual differences in self-esteem affect tendencies for asking and providing help. People with low self-esteem are less likely to ask for help because they feel threatened. The invisibility of the electronic context makes it psychologically less taxing for everyone, but this effect may be stronger for people of low self-esteem. Studies that do not

control for individual differences when measuring the perceived benefits of the help provided and received online may lead to incomplete or even wrong conclusions. McKenna and Bargh (1998) found, for example, that although active participation in support groups was beneficial, the benefits accrued only to those for whom identity as a member of the group was important. Future research on the causes and effects of prosocial behavior at the individual level should incorporate important individual person variables.

Studies using one-time (cross-sectional) questionnaires that ask people to self-report their motivations for helping others are problematic. Cross-sectional studies cannot distinguish the role of motivation from pre-existing group differences, such as the (often) higher educational attainment of volunteers than non-volunteers. Researchers have made some progress in untangling people's *ex ante* motivations for helping from their *post hoc* justifications of helping by conducting laboratory experiments and longitudinal surveys in which causal links among motivations, attributions, and contributions can be assessed more accurately than in cross-sectional surveys (e.g. Penner & Finkelstein, 1998). The archives of public discussion groups offer the opportunity to design and conduct unobtrusive longitudinal studies of prosocial behavior.

McKenna and Bargh (1998) demonstrate how positive responses to a first post increase the likelihood of the newcomer's subsequent active involvement in a group (with attendant changes in self-efficacy in the case of people with socially marginalized identities). No one has yet investigated how repeated positive responses to a person's posts over time increase the likelihood that the person who receives positive responses will increasingly exhibit prosocial behavior toward other online group members. Such a study could offer a direct investigation of the reinforcement aspects of social learning theory. A comparative content analysis of posts from frequent posters with those from infrequent posters could illuminate developmental processes associated with identification with a prosocial subgroup.

Galegher *et al.* (1998) demonstrate how referencing group membership in a request for help increases the likelihood that help will be provided. See Sassenberg (2002) for an example of a cross-sectional linguistic analysis of conformity to group communication norms; see Moon (in progress) for one of a longitudinal study of subgroup identification in public volunteer work groups.

Researchers are becoming more sensitive to ethical issues involved in conducting Internet research on any topic (e.g. Bruckman, 2002; Frankel & Siang, 1999; Nosek *et al.*, 2002; Thomas, 1996). Archival or contemporary studies of prosocial behavior must attend to these ethical issues. In addition, because public discussion groups and volunteer work groups *are* public, it is easy to

post an online questionnaire to the group as a whole or to the e-mail addresses of people who have posted to the group. As more and more social scientists and their students try to study groups by using online questionnaires, the potential subjects of study may react with increasing hostility to what are viewed as 'off-topic' posts. It is important to remember that one person's research instrument is another person's SPAM.

Conclusion

In 2002, a father whose infant son died of sudden infant death syndrome (SIDS) posted a message on the net asking people to help him develop sensor technology to possibly reduce the future incidence of SIDS. Two weeks after his initial post, he had heard from more than one thousand volunteers. As he said:

And the quality of those volunteering has been remarkable. Engineers with deep experience in medical devices and sensors stand out, of course, but the very breadth of talents offered is staggering. Programmers and poets, big idea guys and assembly coders, they just keep coming in . . .

This is the Internet equivalent, I suppose, of a barn raising. People come together and volunteer their talents toward a common and laudable cause. And this type of volunteerism . . . is the real essence of the Internet. It is something that literally couldn't happen any other way or through any other medium . . . Such collaboration simply wouldn't work without the Internet. When some engineer offers . . . two hours of labor per week, which is about the norm, the only way to get anything done is to eliminate meetings, eliminate travel, eliminate the effects of time zones, eliminate as much overhead and friction from the process as possible. And what's left over is the work, itself. (Cringley, 2002)

In sum, the net offers the opportunity to engage in meaningful prosocial behavior, the opportunity to theorize about who engages in these behaviors and why they do, and the opportunity to study these behaviors in a wide variety of electronic contexts.

References

- Akera, A. (2001). Voluntarism and the fruits of collaboration: the IBM user group, SHARE. *Technology and Culture*, **42**(4), 710–36.
- Ashforth, B.E. and Mael, F. (1989). Social identity theory and the organization. *Academy of Management Review*, **14**(1), 20–39.
- Athanasiou, R. and Green, P. (1973). Physical attractiveness and helping behavior. *Proceedings of the 81st Annual Convention of the American Psychological Association*, **8**, 289–90.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. and McDonald, F.J. (1963). Influence of social-reinforcement and behavior of models in shaping children's moral judgments. *Journal of Abnormal and Social Psychology*, **67**(3), 274–81.

- Barsion, S.J. (2002). *MentorNet: the E-mentoring network for women in engineering and science*. Retrieved from the world wide web: <http://www.mentornet.net/Documents/About/Results/Evaluation/>
- Batson, C.D. (1991). *The altruism question: toward a social psychological answer*. Hillsdale, NJ: Erlbaum.
- Batson, D. (1998). Altruism and prosocial behavior. In D.T. Gilbert, S.T. Fiske, and G. Lindzey (eds), *Handbook of social psychology* (4th edn) (Vol. II, pp. 282–316). New York: McGraw-Hill.
- Baym, N.K. (1999). *Tune in, log on: Soaps, fandom, and online community*. Thousand Oaks, CA: Sage.
- Bennett, D., Tsikalas, K., Hupert, N., Meade, T., and Honey, M. (1998, September). The benefits of online mentoring for high school girls: telementoring young women in science, engineering, and computing project. Retrieved from the world wide web: http://www2.edc.org/CCT/admin/publications/report/telement_bomhsg98.pdf
- Boberg, E.W., Gustafson, D.H., Hawkins, R.P., et al. (1995). Development, acceptance, and use patterns of a computer-based education and social support system for people with AIDS/HIV infection. *Computers in Human Behavior*, **11**(2), 289–311.
- Bolger, N., Zuckerman, A., and Kessler, R. (2000). Invisible support and adjustment to stress. *Journal of Personality and Social Psychology*, **79**(6), 953–61.
- Brennan, P.F., Moore, S.M., and Smyth, K.A. (1995). The effects of a special computer network on caregivers of persons with Alzheimer's disease. *Nursing Research*, **44**(3), 166–72.
- Bruckman, A. (2002). Studying the amateur artist: a perspective on disguising data collected in human subjects research on the Internet. *Ethics and Information Technology*, **4**(3), 217–31.
- Butler, B.S., Sproull, L., Kiesler, S., and Kraut, R.E. (forthcoming). Community effort in online groups: who does the work and why? In L. Atwater (ed), *Leadership at a distance*. Mahwah, NJ: Erlbaum.
- Byrne, D., Baskett, G., and Hodges, L. (1971). Behavioral indicators of interpersonal attraction. *Journal of Applied Social Psychology*, **1**(2), 137–49.
- Callero, P.L., Howard, J.A., and Piliavin, J.A. (1987). Helping behavior as role behavior: disclosing social structure and history in the analysis of prosocial action. *Social Psychology Quarterly*, **50**(3), 247–56.
- Chaiken, S. (1979). Communicator physical attractiveness and persuasion. *Journal of Personality and Social Psychology*, **37**(8), 1387–97.
- Chidambaram, L. (1996). Relational development in computer-supported groups. *MIS Quarterly*, **20**(2), 143–65.
- Compeau, D.R. and Higgins, C.A. (1995). Application of social cognitive theory to training for computer skills. *Information Systems Research*, **6**(2), 118–43.
- Constant, D., Sproull, L., and Kiesler, S. (1996). The kindness of strangers: the usefulness of electronic weak ties for technical advice. *Organization Science*, **7**(2), 119–35.
- Cringley, R.X. (2002, May 2). *Chase 2.0 Is that a supercomputer in your jammies?* Retrieved from the world wide web: <http://www.pbs.org/cringely/pulpit/pulpit20020502.html>
- Cummings, J.N., Sproull, L., and Kiesler, S. (2002). Beyond hearing: where real world and online support meet. *Group Dynamics: Theory, Research and Practice*, **6**(1), 78–88.
- Dommeyer, C.J. and Ruggiero, L.A. (1996). The effects of a photograph on a mail survey response. *Marketing Bulletin*, **7**, 51–7.

- Eagly, A.H. and Crowley, M. (1986). Gender differences in helping behavior: a meta-analytic review of the social psychological literature. *Psychological Bulletin*, **100**, 283–308.
- Eisenberg, N. and Miller, P.A. (1987). Empathy and prosocial behavior. *Psychological Bulletin*, **101**, 91–119.
- Emswiler, T., Deaux, K., and Willits, J. (1971). Similarity, sex, and requests for small favors. *Journal of Applied Social Psychology*, **1**, 284–91.
- Field, D. and Johnson, I. (1993). Satisfaction and change: a survey of volunteers in a hospice organisation. *Social Science & Medicine*, **36**(12), 1625–33.
- Fisher, R.J. and Ackerman, D. (1998). The effects of recognition and group need on volunteerism: a social norm perspective. *Journal of Consumer Research*, **25**(3), 262–75.
- Foster, E. (1998, February 2). *Best technical support award: Linux user community*. Retrieved from the world wide web: <http://www.infoworld.com/cgi-bin/displayTC.pl?97poy.sup.htm>
- Foster, E. (1999, November 29). *Best technical support: it may not be the guy on the telephones anymore*. Retrieved from the world wide web: <http://www.infoworld.com/articles/op/xml/99/11/29/991129opfoster.xml>
- Foster, E. (2000, January 14). *Best customer support? The award goes to Sybase Internet newsgroups*. Retrieved from the world wide web: <http://www.infoworld.com/articles/op/xml/00/01/17/000117opfoster.xml>
- Frankel, M.S. and Siang, S. (1999, November). *Ethical and legal aspects of human subjects research on the Internet: A report of a workshop*. Retrieved from the world wide web: <http://www.aas.org/spp/dssp/sfrl/projects/intres/main.htm>
- Galegher, J., Sproull, L., and Kiesler, S. (1998). Legitimacy, authority, and community in electronic support groups. *Written Communication*, **15**(4), 493–530.
- Gray, J.E., Safran, C., Davis, R.B., et al. (2000). Baby CareLink: using the Internet and telemedicine to improve care for high-risk infants. *Pediatrics*, **106**(6), 1318–24.
- Gu, B. and Jarvenpaa, S. (2003, December). *Online discussion boards for technical support: the effect of token recognition on customer contributions*. Paper presented at the Proceedings of the 24th International Conference on Information Systems, Seattle, WA.
- Harrell, W.A. (1978). Physical attractiveness, self-disclosure, and helping behaviour. *The Journal of Social Psychology*, **104**, 15–17.
- Hertel, G., Niedner, S., and Herrmann, S. (2003). Motivation of software developers in open source projects: an Internet-based survey of contributors to the Linux kernel. *Research Policy*, **32**(7), 1159–77.
- Higgins, M.C. and Kram, K.E. (2001). Reconceptualizing mentoring at work: a developmental network perspective. *Academy of Management Review*, **26**, 264–88.
- Hoch, D.B., Norris, D., Lester, J.E., and Marcus, A.D. (1999). Information exchange in an epilepsy forum on the world wide web. *Seizure*, **8**(1), 30–4.
- Hogg, M.A. and Abrams, D. (1988). *Social identifications: a social psychology of intergroup relations and group processes*. London: Routledge.
- Hogg, M.A. and Terry, D.J. (2000). Social identity and self-categorization processes in organizational contexts. *Academy of Management Review*, **25**(1), 121–40.
- Karabenick, S.A. and Knapp, J.R. (1988). Effects of computer privacy on help-seeking. *Journal of Applied Social Psychology*, **18**(6), 461–72.
- Kendall, L. (2002). *Hanging out in the virtual pub: masculinities and relationships online*. Berkeley: University of California Press.

- Kiesler, S., Zdaniuk, B., Lundmark, V., and Kraut, R. (2000). Troubles with the Internet: the dynamics of help at home. *Human-Computer Interaction*, **15**(4), 323–51.
- Knoke, D. (1981). Commitment and detachment in voluntary associations. *American Sociological Review*, **46**(2), 141–58.
- Kramer, R.M. (1993). Cooperation and organizational identification. In J.K. Murnighan (ed), *Social psychology in organizations: advances in theory and research* (pp. 244–268). Englewood Cliffs, NJ: Prentice-Hall.
- Lakhani, K.R. and von Hippel, E. (2003). How open source software works: ‘free’ user-to-user assistance. *Research Policy*, **32**(6), 923–43.
- Latané, B. and Darley, J.M. (1970). *The unresponsive bystander: why doesn't he help?* New York, NY: Appleton–Century–Crofts.
- Lawler, E.J., Thye, S.R., and Yoon, J. (2000). Emotion and group cohesion in productive exchange. *American Journal of Sociology*, **106**(3), 616–57.
- Lim, K.H., Ward, L.M., and Benbasat, I. (1997). An empirical study of computer system learning: comparison of co-discovery and self-discovery methods. *Information Systems Research*, **8**(3), 254–72.
- Lorig, K.R., Laurent, D.D., Deyo, R.A., Marnell, M.E., Minor, M.A., and Ritter, P.L. (2002). Can a back pain e-mail discussion group improve health status and lower health care costs? *Archives of Internal Medicine*, **162**, 792–6.
- MacIntyre, A. (1967). Egoism and altruism. In P. Edwards (ed), *The encyclopedia of philosophy* (Vol. 2, pp. 462–6). New York: Macmillan.
- Mael, F.A. and Ashforth, B.E. (1995). Loyal from day one: biodata, organizational identification, and turnover among newcomers. *Personnel Psychology*, **48**(2), 309–33.
- McKenna, K.Y.A. and Bargh, J.A. (1998). Coming out in the age of the Internet: identity ‘demarginalization’ through virtual group participation. *Journal of Personality and Social Psychology*, **75**(3), 681–94.
- McKenna, K.Y.A. and Green, A.S. (2002). Virtual group dynamics. *Group Dynamics: theory, Research and Practice*, **6**(1), 116–27.
- Mims, P.R., Hartnett, J.J., and Nay, W.R. (1975). Interpersonal attraction and help volunteering as a function of physical attractiveness. *The Journal of Psychology*, **89**, 125–31.
- Moon, J.Y. (in progress). *Identification processes in distributed electronic groups: a study of voluntary technical support groups on the net*. Unpublished doctoral dissertation, New York University, New York, NY.
- Moon, J.Y. and Sproull, L. (2002). Essence of distributed work: the case of the Linux kernel. In P. Hinds and S. Kiesler (eds), *Distributed work* (pp. 381–404). Cambridge, MA: MIT Press.
- Nadler, A. and Fisher, J.D. (1986). The role of threat to self-esteem and perceived control in recipient reaction to help: theory development and empirical validation. *Advances in Experimental Social Psychology*, **19**, 81–122.
- Nelson, T.D. (1999). Motivational bases of prosocial and altruistic behavior: a critical reappraisal. *Journal of Research*, **4**(1), 23–31.
- Nonnecke, B. and Preece, J. (2000a). *Lurker demographics: counting the silent*. Proceedings of the CHI 2000 Conference on Human Factors in Computing Systems, 73–80.
- Nonnecke, B. and Preece, J. (2000b). *Persistence and lurkers in discussion lists: a pilot study*. Proceedings of the 33rd Hawaii International Conference on System Sciences.

- Nosek, B.A., Banaji, M.R., and Greenwald, A.G. (2002). E-research: ethics, security, design, and control in psychological research on the Internet. *Journal of Social Issues*, **58**(1), 161–76.
- Omoto, A.M. and Snyder, M. (1995). Sustained helping without obligation: motivation, longevity of service, and perceived attitude change among AIDS volunteers. *Journal of Personality and Social Psychology*, **68**(4), 671–86.
- Penner, L.A. and Finkelstein, M.A. (1998). Dispositional and structural determinants of volunteerism. *Journal of Personality and Social Psychology*, **74**(2), 525–37.
- Piliavin, I.M. and Piliavin, J.A. (1975). Costs, diffusion, and the stigmatized victim. *Journal of Personality and Social Psychology*, **32**(3), 429–38.
- Piliavin, J.A. and Callero, P.L. (1991). *Giving blood: the development of an altruistic identity*. Baltimore: Johns Hopkins University Press.
- Piliavin, J.A. and Charng, H.-W. (1990). Altruism: a review of recent theory and research. *Annual Review of Sociology*, **16**, 27–65.
- Pope, W.G. (2001). *The use of computer conferencing as an organizational knowledge transfer tool*. Unpublished doctoral dissertation, Pace University, New York, NY.
- Popielarz, P.A. and McPherson, J.M. (1995). On the edge or in between: niche position, niche overlap, and the duration of voluntary association memberships. *American Journal of Sociology*, **101**(3), 698–720.
- Postmes, T., Spears, R., and Lea, M. (2000). The formation of group norms in computer-mediated communication. *Human Communication Research*, **26**(3), 341–71.
- Quan y Hasse, A., Wellman, B., Witte, J., and Hampton, K. (2002). Capitalizing on the Internet: social contact, civic engagement and sense of community. In B. Wellman and C. Haythornthwaite (eds), *The Internet in everyday life* (pp. 291–324). Oxford: Blackwell.
- Rainie, L. and Kalsnes, B. (2001, October 10). *The commons of the tragedy: how the Internet was used by millions after the terror attacks to grieve, console, share news, and debate the country's response*. Washington, DC: Pew Internet and American Life Project. Retrieved from the world wide web: http://www.pewinternet.org/reports/pdfs/PIP_Tragedy_Report.pdf
- Sassenberg, K. (2002). Common bond and common identity groups on the Internet: attachment and normative behavior in on-topic and off-topic chats. *Group Dynamics: Theory, Research and Practice*, **6**(1), 27–37.
- Simon, B., Loewy, M., Stürmer, S., et al. (1998). Collective identification and social movement participation. *Journal of Personality and Social Psychology*, **74**(3), 646–58.
- Simon, B., Stürmer, S., and Steffens, K. (2000). Helping individuals or group members? The role of individual and collective identification in AIDS volunteerism. *Personality and Social Psychology Bulletin*, **26**(4), 497–506.
- Sproull, L. and Faraj, S. (1995). Atheism, sex, and databases: the net as a social technology. In B. Kahin and J. Keller (eds), *Public access to the Internet* (pp. 62–81). Cambridge, MA: The MIT Press.
- Tajfel, H. and Turner, J.C. (1986). The social identity theory of intergroup behaviour. In S. Worchel and W.G. Austin (eds), *Psychology of intergroup relations* (pp. 7–24). Chicago: Nelson-Hall.
- Thomas, J. (1996). Introduction: a debate about the ethics of fair practices for collecting social science data in cyberspace. *Information Society*, **12**(2), 107–17.
- Turner, J.C., Hogg, M.A., Oakes, P.J., Reicher, S.D., and Wetherell, M.S. (1987). *Rediscovering the social group: a self-categorization theory*. Oxford, UK: Basil Blackwell.

- Tyler, T.R. (1999). Why people cooperate with organizations: an identity-based perspective. *Research in Organizational Behavior*, **21**, 201–46.
- Walther, J.B. (2002). Time effects in computer-mediated groups: past, present and future. In P. Hinds and S. Kiesler (eds), *Distributed work* (pp. 235–257). Cambridge, MA: MIT Press.
- Wasko, M. and Faraj, S. (2000). 'It is what one does': why people participate and help others in electronic communities of practice. *Journal of Strategic Information Systems*, **9**(2–3), 155–73.
- Wellman, B. and Gulia, M. (1999). Net surfers don't ride alone: virtual community as community. In B. Wellman (ed), *Networks in the Global Village* (pp. 331–367). Boulder, CO: Westview Press.
- Wellman, B. and Wortley, S. (1990). Different strokes from different folks: community ties and social support. *American Journal of Sociology*, **96**(3), 558–88.
- West, S.G. and Brown, T.J. (1975). Physical attractiveness, the severity of the emergency and helping: a field experiment and interpersonal simulation. *Journal of Experimental Social Psychology*, **11**, 531–8.
- Wilson, D.W. (1978). Helping behaviour and physical attractiveness. *The Journal of Social Psychology*, **194**, 313–14.
- Wilson, J. (2000). Volunteering. *Annual Review of Sociology*, **26**(1), 215–40.
- Winzelberg, A. (1997). The analysis of an electronic support group for individuals with eating disorders. *Computers in Human Behavior*, **13**(3), 393–407.

