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Private e-mail requests and the diffusion of responsibility[☆]

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Abstract

E-mail technology provides a way of requesting information or assistance from multiple sources by simultaneously addressing a letter to more than one recipient. Models of prosocial behavior taken from social psychology and economics suggest that the probability of receiving a helpful response is an inverse function of the number of simultaneous addressees. An experiment is presented which examines this prediction in the context of an e-mail request for information. The results show that there are more responses to e-mails addressed to a single recipient, that these responses are more helpful, and that they are lengthier. Response rates and measures of helpfulness were found to be independent of explicit information pertaining to the ability of other recipients to provide assistance. Implications of the results for the application of social cueing theory to e-mail communication and direct marketing are discussed. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Diffusion; Responsibility; Social; Dilemma; Cueing; Helping; E-mail

1. Introduction

Individuals requesting assistance or information are increasingly turning to e-mail technology as a way of increasing the number of helpful responses. In fact, requests and answers to requests constitute a large proportion of e-mail messages in organizational settings (Camino, Milewski, & Millen, 1998; Phillips & Eisenberg, 1993). An intuitive method of requests, made possible by the Internet, is to simultaneously address the e-mail to a number of people at once, thus maximizing the probability of a helpful response. Appendix A shows an example of such an e-mail, addressed to a

[☆] This study conforms to the Technion Ethical Regulations for Human Studies in the Behavioral Sciences.

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computer mediated discussion group. This paper presents an experiment demonstrating that addressing e-mails simultaneously to multiple recipients may actually reduce the number of helpful responses.

Computer mediated communication allows us to correspond on a larger scale than was previously possible before the introduction of technologies such as e-mail (Hiltz & Turoff, 1978; Hiltz & Wellman, 1997). When seeking assistance or information it is often possible to simultaneously address a large number of users who share a common interest of some relevance to the query. Such groups are organized via group communication technologies such as newsgroups, listservs, electronic bulletin boards, etc. The social interactions that occur within these public settings have been called “virtual publics” (Jones & Rafaeli, 1999), in contrast to the interaction that takes place through private communication channels. While extensive research continues to be conducted on various aspects of virtual publics (Smith, 1992; see Jones & Rafaeli, 1999 for a review), there seems to be substantially less experimental work focused on the social interactions in private e-mail communications.

According to Information Richness Theory (Daft & Lengal, 1986) e-mail communication has a moderate level of ambiguity, being less ambiguous than formal written text (documents and bulletins) but more so than face-to-face and telephone (Schmitz & Fulk, 1991). Accordingly, e-mails can be used in a request for specific information that requires an unambiguous response at a time when face-to-face or telephone communication is not available or is inconvenient.

E-mail has several additional characteristics (see Constant, Sproull, & Kiesler, 1997; Culnan & Markus, 1987; Rogers, 1986) that make it a natural media for help requests. First, e-mail is asynchronous which allows help requests to be both sent and responded to at the convenience of both parties. Secondly, e-mails lack of paralinguistic information can be advantageous where one does not want others to be aware of emotions associated with the request (i.e. uncertainty, anxiousness, etc.). Additionally, e-mails high plasticity (the ability to save and store messages) allows the convenient documentation of help requests and responses. Finally, being less formal than written letters, e-mail is “capable of crossing functional and hierarchical lines without encountering traditional gatekeepers” (Phillips & Eisenberg, 1993).

Often, when seeking assistance or information via e-mail, it is either difficult or inappropriate to identify the exact addressee to which a request may be sent. Specifically, we are interested in those cases where one knows a limited number of addresses that may be able to provide the desired information. A request may then be sent to these addresses simultaneously using e-mail technology, thus maximizing the probability of receiving the desired information. Additionally, in order to preserve bandwidth and save time, it makes sense to send a single e-mail containing the request with multiple recipients’ addresses listed in the “To:” field of the e-mail (as in the example shown in Appendix B). The alternative, sending multiple copies of the same e-mail to each recipient individually, consumes both time and Internet resources with the same apparent outcome: having all the recipients read the same request.

Paradoxically, experimental and theoretical studies in the fields of psychology and economics suggest that the latter (sending individual e-mails), seemingly inefficient,

alternative may maximize the recipients' tendency to behave prosocially and to provide the requested assistance. The present paper outlines this literature and presents experimental data demonstrating that recipients of e-mail requests will be more helpful when they perceive that they are the sole recipient of the request, than when observing that they are but one of a larger group who have received the same request.

Social psychologists began to study prosocial behavior (“those actions intended to benefit one or more person other than oneself”, Batson, 1998) in earnest in the 1960s. Research was motivated, in part, by a number of cases in which bystanders declined to help people in desperate need. One well-known case is that of Kitty Genovese whose stabbing and screams were witnessed by 38 bystanders who did nothing to help. This event, and other events like it, were often interpreted as a breakdown in the moral fiber of society. An alternative explanation was suggested by social psychologists like Darley and Latané (1968; Latané & Darley, 1970) who proposed a diffusion of responsibility explanation, asserting that an individual feels less obligated to help if others are perceived as being able to help. In their study, Darley and Latané (1968) observed subjects' attempts to help when they heard another subject (a confederate) having a seizure. While some subjects thought that they were the only ones hearing the seizure, other subjects thought that another one or another four “bystanders” (who were also subjects) were hearing the same thing. They found that subjects were less likely to help the greater the number of bystanders.

The diffusion of responsibility also has a role in theories of social loafing (Williams, Harkins, & Latané, 1981), and reactions to resource dilemmas (Fleishman, 1980). In addition, Diekmann (1985) provides a quantitative account for the diffusion of responsibility by way of a game theoretical analysis of the “volunteer's dilemma”. In the volunteer's dilemma one player is needed to volunteer (to help, in the current context) in order to reach the outcome preferred by all. The utility of not volunteering is higher than the utility of volunteering assuming that someone else has volunteered. Accordingly, all players prefer to volunteer only if they know that no one else is volunteering, and not to volunteer otherwise (since in this case volunteering would be a waste of resources). According to this account, the probability of volunteering decreases with the group size, thereby producing the diffusion of responsibility effect¹.

Empirical studies from the fields of social psychology, experimental economics, and computer mediated discourse support the diffusion of responsibility phenomenon (Darley & Latané, 1968; Diekmann, 1986; Freeman, Walker, Borden, & Latané, 1968; Latané, 1981; Latané & Dabbs, 1975; Smith, 1992). However, it is not clear to what extent these results may be generalized to private e-mail requests for information. In particular, social cueing theory (Darley & Latané, 1968) stresses the fact that diffusion of responsibility is based on the “cue value” of bystanders, or the assumption that others are capable of helping. Ross and Braband (1973)

¹ Theories of equilibrium selection prescribe that each player choose to help with a probability of $1 - (K/U)^{1/(N-1)}$ where N is the group size, U is the utility received assuming at least one player volunteers and K is the cost for a specific player to volunteer (Diekmann, 1985 and see Harsanyi & Selten, 1988).

demonstrated the importance of the cue value in an experiment where subjects' response to odorless smoke was not decreased by the presence of a bystander thought to be blind. In an e-mail request with multiple addressees there is a lack of knowledge pertaining to the ability of others to provide assistance. Indeed, unlike physical communication, it is even not known if others even exist.

Given these limitations, it is not at all clear whether or not addressees in an e-mail request will still treat the other addressees as bystanders. The following experiment examines this question in detail. One possibility, in line with cue theory, is that diffusion of responsibility occurs particularly when the e-mail addresses of other addressees contain information suggesting that they are capable of providing the requested assistance. For example, one might assume that "sarah@ibm.com" is able to provide more information about IBM than "sarah@yahoo.com" because the e-mail address of the former suggests that Sarah is a member of the IBM organization. If so, we would expect more diffusion of responsibility to occur in the former than in the latter case.

2. Experiment

The purpose of the experiment was to study the diffusion of responsibility effect in the context of e-mail requests, and in addition, to examine the cue value of multiple addressees. For the first part, requests for help were sent either to single addresses or to a list of five addresses. For the second part, we used optimal and sub-optimal conditions for the diffusion of responsibility effect according to social cueing theory.

Specifically, the content of the e-mail request was such that anyone from a specific institution could answer it ("Is there a biology faculty in the institution?"). The list of e-mail addresses contained either the name of the server of that institution (as the domain name), or widely used servers (such as "Yahoo" and "Hotmail"). It was assumed that, in the former case, virtual "bystanders" would be evaluated as being capable of answering the request, which is a matter of general knowledge to members of the institution. For the latter case of "generic" addresses, in accordance with social cueing theory it was predicted that, if multiple e-mail addresses do in fact constitute virtual bystanders, the diffusion of responsibility would be less than when using institutional addresses. Like the blind man in Ross and Braband (1973), virtual bystanders with generic addresses would *not* be evaluated as being able to provide the requested assistance.

2.1. Participants

A subject pool of 240 e-mail addresses was formed by polling two Technion Unix servers. The Unix "who" command provided a list of all users connected to the server in two sampling epochs: Monday at 16:00 and Tuesday at 10:30. This was carried out with the approval of the server administrator. Users with accounts on these servers are typically a mixture of graduate and doctoral students, faculty members and administrative staff members.

2.2. Procedure

E-mail addresses were randomly assigned to three conditions: Single, Quintuple Institutional, and Quintuple Generic, the condition name denoting the number of addresses used per e-mail. For example, a subject in the Single condition would be the only recipient of an e-mail request, while a Quintuple Institutional subject would receive an e-mail addressed to her along with four other people with institutional addresses. Quintuple Generic subjects received e-mails addressed to themselves and four other recipients with addresses from the general use servers Yahoo, Hotmail, and Zohav.

The total number of users in the two polled servers was above 3000, with users dispersed over several faculties and research centers. Therefore it was unlikely that the additional e-mail addresses (in the Quintuple conditions) would be identified by an addressee. On the other hand, e-mail addresses in these two servers have unique endings (e.g. `xxxx@technion.university_name.ac.il`) identifying the additional e-mail addresses as belonging to users of the same server, and accordingly to members of the same institution (i.e. the Technion).

E-mail was sent to all the recipients via a fictitious e-mail account set up at yahoo.com for the purpose of the experiment. The subject line of the e-mail was “Please help”. The body of the e-mail (see Appendix D) contained a request from Sarah Feldman, a fictitious graduate student who wanted to know if the university has a biology faculty (which it does). The answer to this question is common knowledge to anyone familiar with the institute.

It was anticipated that a small number of recipients might reply to the entire group (in the Quintuple Institutional condition) thereby eliminating the need for others to reply. These groups of five recipients would then be tainted in terms of further analysis. Therefore, an uneven allocation between the experimental conditions was employed with 70 Single addresses, 85 Quintuple Institutional addresses and 85 Quintuple Generic addresses.

2.3. Measures

Responses were divided into the following four categories:

1. NR—No response.
2. R—A response without the requested information. For example “Find the web page and look yourself!”
3. HR—A helpful response with the requested information. For example “Yes, there is a biology faculty at the university”
4. VHR—A very helpful response which, in addition to the requested information, contained additional information thought by the recipient to be helpful. For example, specific URLs, telephone numbers or alternative biology faculties.

The number of words in e-mails in the HR and VHR categories was also counted. The count included the introduction (e.g. “Hello Sarah”) as well as the initial

signature (e.g. “Sincerely, Mike”) but did not include automatic signatures containing all the responders contact information. Telephone numbers and URLs were counted as one word.

3. Results

Responses were divided into the four response categories by two judges who worked independently and were blind to the respondents’ experimental condition. The inter-judge correlation (Spearman coefficient) was 0.94 ($P < 0.01$). Groups of addresses from the Quintuple Institutional condition that received responses carbon copied (Cc:) to the entire group were eliminated from further analysis. There were two such replies in the Quintuple Institutional condition (10 subjects). Additionally, five addresses (one from the Quintuple Institutional condition and four from the Quintuple Generic condition) produced a “message not delivered” response. Thus, the total number of analyzed addressees was 225.

Table 1 presents the overall proportion of replies falling into each of the response categories for each of the conditions. No significant differences were observed between the Quintuple Institutional and Quintuple Generic conditions and they were aggregated for the remainder of this analysis. Fig. 1 presents the proportion of replies (any reply, including the R, HR and VHR categories) in the Single and collapsed Quintuple conditions. The proportion of replies in the Single condition was 29% larger than that of the other two conditions ($Z = 2.04$, $P < 0.05$ test for difference in proportions).

Fig. 2 presents the proportion of replies falling into the “Helpful Response” and “Very Helpful Response” categories according to their condition. As can be seen, the proportion of “Very Helpful” replies in the Single condition was almost twice (187%) the proportion of “Very Helpful” replies in the other two conditions ($Z = 2.48$, $P < 0.05$).

Table 2 shows the mean number of words in the “Helpful” and “Very Helpful” replies from the three conditions. An ANOVA performed with the response category entered as a control variable shows no significant difference [$F(1, 111) = 2.48$, ns] between the two Quintuple conditions and they were collapsed for the remainder of this analysis. Fig. 3 presents the average length of Helpful and Very Helpful

Table 1
Proportion of total replies in the three conditions

	Single	Quintuple Institutional	Quintuple Generic
No Response	0.36	0.47	0.53
Response (not helpful)	0.07	0.04	0.02
Helpful Response	0.26	0.31	0.30
Very Helpful response	0.31	0.18	0.15
Sum	1.0	1.0	1.0

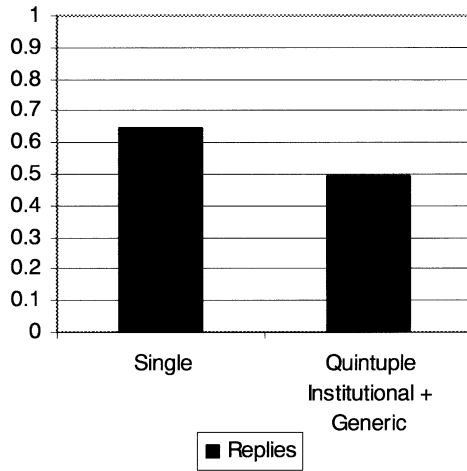


Fig. 1. Proportion of overall replies in the Single and collapsed Quintuple conditions.

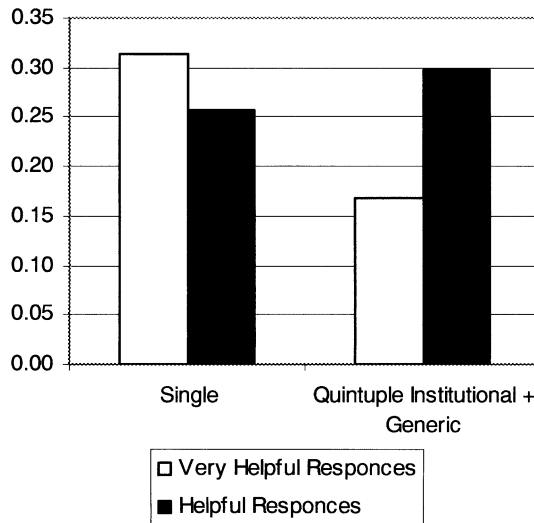


Fig. 2. Proportion of Helpful Responses and Very Helpful Responses according to condition.

responses in the Single and collapsed Quintuple conditions. The mean length of the Very Helpful Responses appears greater than that of the Helpful responses and the mean length of Very Helpful Responses in the Single condition (34 words) is 49% larger than that of Very Helpful Responses in the collapsed Quintuple condition (23 words). An ANOVA performed with the response category entered as a control variable confirms the visual impression with significant effects of both the condition [$F(1,$

Table 2
Average length of helpful and very helpful responses in the three conditions

	Single	Quintuple Institutional	Quintuple Generic
Length of Helpful Responses	19	14	19
Length of Very Helpful Responses	34	21	25
Average length	27	17	21

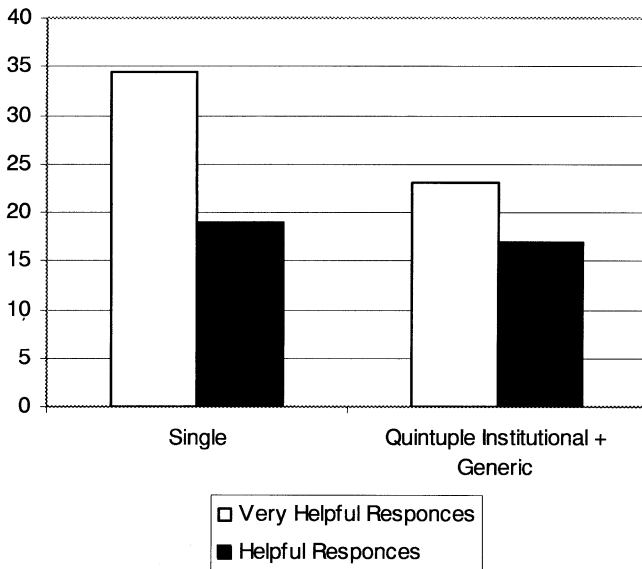


Fig. 3. Mean length of Helpful Responses and Very Helpful Responses by condition.

111)=4.78, $P < 0.05$] and the response category [$F(1, 112) = 13.04$, $P < 0.05$] on the number of words in the reply. The interaction was not significant [$F(1, 111) = 2.35$, ns].

4. Discussion

The experiment examined the effect of the number of addresses in an e-mail request on the response rate and on the helpfulness and length of response. The results indicate that addressing e-mail requests one at a time, in contrast to five addresses at a time, has a positive effect. Specifically, single e-mails received a higher rate of response. They also received a much larger share of very helpful responses that contained additional information above and beyond the original request for

assistance. In addition, the length of responses, assumed to be some indication of effort, was found to be related to the number of addresses in the header. Longer responses were received from recipients who were the sole addressee of the request. The same pattern of results was found when additional addresses in the e-mail header contained information suggesting that the other recipients could provide assistance as when this information was absent. The observed decrease in assistance from recipients of multiple addressed requests is in line with the diffusion of responsibility effect, where the probability of helping is assumed to be an inverse function of group size.

The primary implication of these results is that additional recipients, listed in the e-mail header, constitute bystanders and thus lead to the diffusion of responsibility. These findings are consistent with those of empirical studies that have investigated contributions to ongoing computer mediated group discussions (Rojo & Ragsdale, 1997a, 1997b; Smith, 1992). Such studies found evidence of social loafing in virtual publics. Smith, for example, found that 1% of the 7000 person user-population generated 50% of all the postings to a commercial Bulletin Board System. The other 99% merely read the different requests and answers without contributing their own knowledge. Likewise, Rojo and Ragsdale (1997a) found that 82% of the user population of academic e-mail forums never contributed, but only read the dialogue of others.

A second conclusion that can be drawn from the results, and related to the diffusion of responsibility, is that virtual bystanders (in the form of additional addresses) were perceived as being capable of providing assistance even in the absence of information suggesting this. Ross and Braband (1973) argued and demonstrated that the perception that others are able to respond is crucial in producing a diffusion of responsibility. The present results suggest that in the context of private e-mail discourse, social cues regarding others' ability to respond are not necessary in order to produce a diffusion of responsibility.

One possible explanation for the seemingly contradicting findings is that subjects in the present study inferred information concerning the ability of the other recipients to provide assistance solely from their presence in the header. In other words, a recipient might reason that if the person sending the request added additional recipients to the e-mail, it is because he or she had information suggesting that the additional recipients can provide assistance. If this is the case, it would imply that cues regarding others' ability to provide assistance are automatically triggered by the situation (i.e. receiving an e-mail request for assistance addressed to more than one recipient). An automatic activation of social cues is argued in a like manner by Bargh and Chartrand (1999). They maintain that the evaluation of a situation becomes part of its perceptual representation and is immediately activated in the course of perceiving the situation.

The present results also have practical implications. Appendices A–C show actual e-mails received by the authors containing requests for volunteers, requests for assistance, or advertisement of a product. All three e-mails are addressed to either multiple recipients or e-mail discussion groups so that the entire group (typically a large number of people) receives the same e-mail. To the extent that the recipient

perceives a group address as a group of bystanders, the results suggest that a higher response rate might be obtained by sending single e-mails to all the addresses on the lists. A higher response rate will be beneficial even when searching for one piece of information if, as is often the case, there is a limited number of possible respondents. Assuming a limited number of possible respondents, response rates are obviously important as each individual response counts (i.e. collection of information or marketing). Further studies should examine the effect of the kind of information requested (i.e. looking for a single piece of information vs. “every answer counts”) on the diffusion of responsibility patterns.

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Appendix A*

Date: Mon, 7 May 2001 19:26:21–0400
From: Jim Davies <jds.63@OIU.EDU >
Reply-To: Industrial Psychology Forum <ZIOEBF-L@LISTSERV.UGA.EDU >
To: ZIOEBF-L@LISTSERV.UGA.EDU
Subject: Research request
(My apologies for cross-postings)

Hello,

My name is Jim Davies, currently a Graduate Teaching Associate (GTA) working on my doctoral dissertation in Industrial and Organizational psychology at the Nevada State University. . .

I ask that you go to the following website and follow the directions on the first page:

http://survey1.psy_.buffalo.edu/cgi-bin/SAprojects/jim/lists.pl

Please contact me by e-mail if you have any questions or concerns about this project. I appreciate your attention to this research project and wish you the best in your own academic careers.

Thank you,

Jim Davies

*In the interest of privacy, names and e-mail addresses have been changed.

Appendix B*

Date: Mon, 7 May 2001 10:37:12 +0300 (IDT)

From: Doe Lilach <armoinyl@techunix.technion.ac.il>

To: seminar2000-1 – Alon <alflogn@netvision.net.il>, Avi Doe <pfardush@techunix.technion.ac.il>, Cristina Doe <ijahni@techunix.technion.ac.il>, “Daniel Doe, Prof.” <ijerbhw05@ie.technion.ac.il>, Dgaanit Doe <dgsadnitbr@techunix.technion.ac.il>, Dr. Dov Doe <dzjohhar@techunix.technion.ac.il>, Dr. Doe <johfacdhim@bgumail.bgu.ac.il>, Dror Doe <shafgnyd@techunix.technion.ac.il>, Efrat <efukoed@hotmail.com>, Eitoan Doe <navieh@ie.technion.ac.il>, Gil Doe-Graff <hgoil@ui.co.il>, Gilly Doe <leusheod@techunix.technion.ac.il>, Gneezy <gnieuezy@ie.technion.ac.il>, Greg <baorruon@techunix.technion.ac.il>, Guy Doe <guyoshain@netvision.net.il>, Gyora Doe <gyuora_seogev@hotmail.com>, Hadas Doe <danieilyh@techunix.technion.ac.il>, Hadas Doe <nihadas@techunix.technion.ac.il>, Haruvi <harouvy@ie.technion.ac.il>, hernan Doe <hernooan@techunix.technion.ac.il>, Hila <hilaum@elbit.co.il>, Ilan Doe <ilanipaolatin@yahoo.com>, Itkin Doe <ruitkiin@techunix.technion.ac.il>, Jonathan Doe <jleuvoy@techunix.technion.ac.il>, Lilach Doe <aromionyl@techunix.technion.ac.il>, Limor Doe <lloviie@techunix.technion.ac.il>, Michal Doe <imoicihal@techunix.technion.ac.il>, Nela Doe <chiillaugn@techunix.technion.ac.il>, Nirit Doe <noiruity@techunix.technion.ac.il>, Noemi Doe <nooemiib@techunix.technion.ac.il>, Orit Doe - Rappaport <odriap@netvision.net.il>, Orit Doe <orupeorry@zahav.net.il>, Orna Doe <h_giil@netvision.net.il>, Prof. Anat Doe <aniatur@ie.technion.ac.il>, Prof. Gabi Doe <gaoibig@techunix.technion.ac.il>, Prof. Ido Doe <erieov@ie.technion.ac.il>, Rachel Doe <rnaive@techunix.technion.ac.il>, Roi Doe <Roi.Siovan@ness.com>, Ronit Lusky <rлуusiy@hotmail.com>, Shabtai Galia <gshuaotai@techunix.technion.ac.il>, Shaked Doe <gshuakied@techunix.technion.ac.il>, Sharon Doe <sharioung@techunix.technion.ac.il>, Shay at Doe <yeosuim@techunix.technion.ac.il>, Shay Ben- Doe <beunbairak@techunix.technion.ac.il>, Sivan Doe <siuvian@techunix.technion.ac.il>, Tamar Doe <taomaurd@ui.co.il>, Tami Doe <votaimar@yahoo.com>, Wiel Doe <maiow@internet-zahav.net>, Yaakov Doe <neitsuafe@netvision.net.il>, Yael Doe <yaoyiriv@hotmail.com>, Yehiam Doe <yeilduad@techunix.technion.ac.il>, Zvi Doe <zsitor@barak-online.net>

Subject: Thursday talk—May 17th

Hi Everybody!

This Thursday (May 17th) Dr. Doe Zohar will talk about:
“Supervision Based Safety: A new intervention model”

Any volunteers for snack duty?

See you all there,
Lilach.

*In the interest of privacy, names and e-mail addresses have been changed.

Appendix C*

Date: Wed, 9 May 2001 10:52:54
From: Janet Doe <Janet_doe@court.com >
Reply-To: _____.
To: Journal List _____@lists.lists.com >
Subject: Thank You

Dear Colleague,

The Journal of _____ would like to thank You for your support of and loyalty to the journal.

Whether you are a contributor or a reviewer, or have assisted in another way, you have been instrumental in helping _____ to become what it is today—the premier journal in the field of _____.

In appreciation, we would like to offer you a 25% discount on any books published by _____ Press. To choose from the many titles available in our varied publishing areas, please view our on-line catalog, which you can access via the links below.

For ease of fulfilment, please order through the location nearest you:
In US, Canada and Latin America: http://www._____.com/thankyou/
In Europe, Middle East and Africa, Asia and Australia:
http://www._____.com/thankyou/

We look forward to our continued association.

Sincerely yours,

Publisher,
Global Team Leader

*In the interest of privacy, names and e-mail addresses have been changed.

Appendix D*Single condition*

Date: Mon, 7 May 2001 19:26:21–0400
From: Sarah Feldman <feldman@yahoo.com >
To: harry@bt.technion.ac.il
subject: please help

Quintuple Institutional condition

Date: Mon, 7 May 2001 19:26:21–0400
 From: Sarah Feldman <feldman@yahoo.com>
 To: harry@bt.technion.ac.il, fredy@bt.technion.ac.il, jannet@bt.technion.ac.il,
 frieda@bt.technion.ac.il, susan@bt.technion.ac.il
 subject: please help

Quintuple Generic condition

Date: Mon, 7 May 2001 19:26:21–0400
 From: Sarah Feldman <feldman@yahoo.com>
 To: harry@bt.technion.ac.il, david_87_5@zahav.net.il, opary76@hotmail.com,
 38Labovitz@hotmail.com, gilad_H_G@yahoo.com
 subject: please help

I am a graduate student of biology and am considering continuing my studies at the Technion. Do you know if there is a biology faculty at the Technion?

Thanks in advance,
 Sarah Feldman

*In the interest of privacy, e-mail addresses have been changed.

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