The effect of anonymity on electronic meetings

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ABSTRACT

The use of anonymity has been attributed to be a major factor in the success of electronic meetings, contributing to greater participation, more and better comments, and higher satisfaction. Several studies have attempted to measure its affect on meetings, but none has investigated non-anonymous, pseudo-anonymous, and anonymous treatments in the same experiment. A study using these three types of groups in electronic meetings to discuss a relatively non-controversial topic revealed no statistically significant difference in the number of comments generated per person, level of process satisfaction, and other self-perceived measures.

INTRODUCTION

Electronic meetings have been shown to increase the efficiency and effectiveness of large groups which need to share ideas and preferences (Dennis & Valacich, 1993). Using electronic meeting systems (EMS), group support systems (GSS), group decision support systems (GDSS), or groupware, participants typically type comments simultaneously and anonymously while all of the text is automatically recorded, reducing the meeting type by over 50 percent in some cases as compared to traditional, oral meetings (Nunamaker, Vogel, Heminger, Martz, Grohowski, & McGoff, 1989). Through an anonymous, electronic meeting, group members are able to express opinions candidly with little fear of repercussion, a capability not present in verbal meetings.

Although a few studies have examined the influence of anonymity on groups, the results have been inconclusive or contradictory due to differences in software, task, group size, and other factors. This study examined the effect of three levels of anonymity on the number of comments generated per person by group members as well as self-assessed measures such as perceived software ease-of-use and meeting process satisfaction.

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BACKGROUND

Earlier research has indicated that anonymity along with other factors influences group processes and outcomes, as shown in Figure 1. Anonymous groups may generate more comments than non-anonymous groups (Connolly, Jessup, & Valacich, 1990), but other studies found no effects on the number of comments (Jessup, Connolly, & Galegher, 1990; Jessup & Tansik, 1991). Anonymity increased participation in one study (Lea & Spears, 1991) but had no effect in another (Hiltz, Turoff, & Johnson, 1989). The effect of anonymity on participation, satisfaction, and post-discussion agreement might depend on the level and type of anonymity (Kahai & Avolio, 1998; Sosik, Avolio, Kahai, 1997). Some have found that anonymity reduces participant satisfaction (Valacich, Dennis, & Nunamaker, 1992), but others have found the reverse to be true (Aiken, Aljumaih, Reithel, & Conlon, 1997).

Part of the discrepancies in the reported results can be explained by the differences in group size, software task, and other variables in the studies (Nunamaker, Dennis, Valacich, Vogel, & George, 1991). For example, most of the negative effects on anonymity were based upon studies of groups with less than eight participants, but GSS benefits arise only above this breakeven point (Aiken, Krosp, Shirani, & Martin, 1994). Further, there are significant differences among idea generation software (Aiken, Sloan, Paolillo, & Motiwalla, 1997). Thus, it can be difficult to generalize these results beyond the specific conditions in which the experiments were conducted.

Figure 1. A Model of Influential Factory in Electronic Meetings
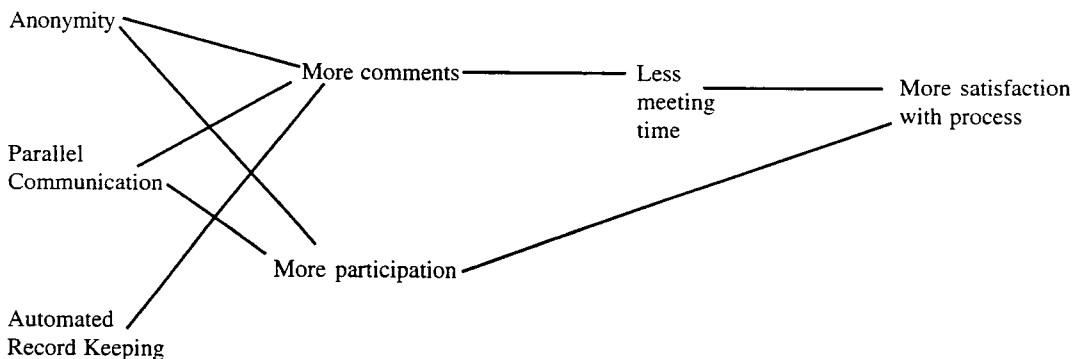
Prior studies have not compared anonymous, pseudo-anonymous, and non-anonymous brainwriting groups directly. Rather, they often have compared anonymous brainwriting groups with non-anonymous oral groups, confounding the results with anonymity effect and a meeting technique effect. That is, results could be due, at least in part, to the meeting style rather than the anonymity.

The study reported here is the first to compare three levels of anonymity with large, electronic gallery writing groups. Electronic gallery writing allows group members to see all comments simultaneously, while electronic poolwriting (used in some of the earlier experiments) segregates the comments. At any other time using poolwriting, each participant views only a unique subset of the total file of comments, and the technique has been less satisfactory for group members than gallery writing (Aiken, Vanjani, & Paolillo, 1996).

For brevity, the three treatments will be abbreviated as Anon (Anonymous), PA (pseudo-anonymous), and NA (non-anonymous) throughout the remainder of the paper.

EXPERIMENT

Hypotheses

Based upon theory from the literature cited above, the following hypotheses are developed that correspond to the questions in Appendix 1:

H_1:   There is no significant difference among the meeting types in the fear of others criticizing comments.

H_2:   There is no significant difference among the meeting types in the ease of submitting and reading comments.

H_3:   There is no significant difference among the meeting types in the knowledge of group members.

H_4:   There is no significant difference among the meeting types in the ability to identify comments.

H_5:   There is no significant difference among the meeting types in perceived participation.

H_6:   There is no significant difference among the meeting types in the ability to express opinions.

H_7:   There is no significant difference among the meeting types in the perceived anonymity of comments.

H_8:   There is no significant difference among the meeting types in the meeting preference.

H_9:   There is no significant difference among the meeting types in the ability to read comments.

H_{10}:   There is no significant difference among the meeting types in process satisfaction.

H_{11}:   There is no significant difference among the meeting types in the number of comments generated.

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Procedure

Forty-eight undergraduate business students (37.5% female) volunteered to participate in the experiment for extra credit. Subjects were assigned randomly to treatment type (Anon, NA, or PA) and group. Two groups of eight subjects were assigned to each treatment type.

The facilitator explained the purpose of the experiment to each group and demonstrated how to use the GSS software. Subjects used an electronic gallery writing program that allowed simultaneous submission and views of comments on individual computer screens in a face-to-face environment. Comments written by the NA group members had the subjects' names attached at the beginning of the text, while comments written by the PA group members had their user number attached at the beginning. Subjects were allowed 10 minutes to discuss the problem of parking on campus, a task used in several other GSS experiments (e.g., Gallupe, Dennis, Cooper, Valacich, Bastianutti, Nunamaker, 1992). Following the electronic meetings, subjects completed the questionnaire shown in Appendix 1, and the number of comments per individual was counted by the facilitator. The software automatically recorded the user number, text, and time of submission for each comment.

Results

Summary results for all groups are shown in Table 1. On average, group members were not afraid of others' criticism of their comments, thought it was easy to submit and read comments, did not know others' in their group, were not able to identify who wrote particular comments, thought all group members participated, were able to express their opinions easily, thought the comments were anonymous, preferred the electronic meeting over an oral meeting, were able to read all comments written by their group, and were satisfied with the electronic meeting process.

Table 1. Variable Summary Statistics (all meeting types) N = 48

Variable	Mean	Std Dev	F	Pr>F
Q1 AFRAID	2.00**	1.58	1.61	0.21
Q2 EASY	5.54**	2.10	1.98	0.15
Q3 KNOW	2.21**	1.35	1.18	0.32
Q4 IDENT	4.79*	1.98	6.56	0.01*
Q5 PART	4.88**	2.20	1.99	0.15
Q6 XPRESS	6.13**	1.38	0.68	0.51
Q7 ANON	3.42	2.52	42.13	0.01*
Q8 PREFER	4.58**	1.91	2.04	0.14
Q9 READ	5.58**	2.15	1.81	0.18
Q10 SAT	5.33**	1.84	0.46	0.64
Comments per person	3.50	3.52	2.51	0.09

* = significantly different from median value of 4.0 at $\alpha = 0.05$
** = significantly different from median value of 4.0 $\alpha = 0.01$

An Analysis of Variance (Table 1) showed that there was no significant difference among the three meeting types for all of the variables with the exception of the ability to identify who wrote which comments and the perceived anonymity of the comments. Thus, we can reject only H_4 and H_7. These results are not surprising because the primary treatment was the relative amount of anonymity provided to the electronic meeting comments. Both of these questions asked the subjects to evaluate the level of anonymity in the meeting. Although the facilitator explained to the groups that the comments were anonymous, pseudo-anonymous, or non-anonymous, subjects were left to themselves to judge the accuracy of these statements.

Tables 2, 3, and 4 show summary results for each type of meeting. The levels of self-perceived anonymity are clearly different for the three groups. The number of comments generated per person by subjects in each of the three types of groups was significant only at $p = 0.09$ (Table 1), but the NA subjects tended to generate the most comments.

Table 2. Variable Summary Statistics (anonymous meetings)

Variable		Mean	Std Dev
Q1	AFRAID	1.63**	1.54
Q2	EASY	4.88	2.39
Q3	KNOW	2.63**	1.41
Q4	IDENT	3.38	1.75
Q5	PART	4.38	2.16
Q6	XPRESS	6.38**	0.89
Q7	ANON	6.13**	1.41
Q8	PREFER	4.44	1.59
Q9	READ	5.00	2.42
Q10	SAT	5.38**	1.50
Comments per person		2.75	3.02

* = significantly different from median value of 4.0 at $\alpha = 0.05$
** = significantly different from median value of 4.0 $\alpha = 0.01$

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Table 3. Variable Summary Statistics (pseudo-anonymous meetings)

Variable		Mean	Std Dev
Q1	AFRAID	1.81**	1.56
Q2	EASY	5.44*	2.42
Q3	KNOW	1.94**	1.34
Q4	IDENT	5.44*	2.10
Q5	PART	4.50	2.53
Q6	XPRESS	6.19**	1.52
Q7	ANON	2.81*	1.97
Q8	PREFER	5.31*	1.89
Q9	READ	5.38*	2.58
Q10	SAT	5.00	2.48
Comments per person		2.69	2.50

* = significantly different from median value of 4.0 at $\alpha = 0.05$
** = significantly different from median value of 4.0 $\alpha = 0.01$

Table 4. Variable Summary Statistics (non-anonymous meetings)

Variable		Mean	Std Dev
Q1	AFRAID	2.56**	1.59
Q2	EASY	6.31**	1.08
Q3	KNOW	2.06**	1.29
Q4	IDENT	5.25**	1.44
Q5	PART	5.75**	1.69
Q6	XPRESS	5.81**	1.64
Q7	ANON	1.31**	1.01
Q8	PREFER	4.00	2.10
Q9	READ	6.38**	0.96
Q10	SAT	5.63**	1.41
Comments per person		5.06	4.43

* = significantly different from median value of 4.0 at $\alpha = 0.05$
** = significantly different from median value of 4.0 $\alpha = 0.01$

Table 5 shows the results of a correlation analysis of the data. The ability to identify comments and the degree of anonymity were significantly correlated with the type of meeting and with each other, and the ease of submitting comments marginally significant. The NA subjects gave the highest rating for ease of use. Satisfaction with the meeting process was significantly correlated with ease of use, participation, expression, meeting preference, ability to read all comments, and number of comments generated per person. Ease of use and participation were significantly correlated with expression, and the ability to read all comments was significantly correlated with then number of comments generated per person.

Table 5. Pearson Correlation Coefficients / Prob > | R | under Ho: Rho=0 / N = 48

	TYPE	AFRAID	EASY	KNOW	IDENT	PART	EXPRESS	ANON	PREFER	READ	SAT	COM
TYPE	1.0	-0.24	-0.28	0.17	-0.39	-0.26	0.17	0.79	0.09	-0.26	-0.06	-0.27
	0.0	0.09	0.05	0.24	0.01	0.08	0.25	0.01	0.52	0.07	0.70	0.60
AFRAID		1.00	0.11	-0.18	0.05	0.09	-0.27	-0.22	0.28	0.24	0.05	0.02
		0.0	0.46	0.22	0.75	0.56	0.06	0.14	0.05	0.10	0.73	0.92
EASY			1.00	0.06	0.10	0.30	0.40	-0.22	0.28	0.24	0.05	0.02
			0.0	0.70	0.49	0.04	0.01	0.13	0.55	0.08	0.01	0.01
KNOW				1.00	-0.05	-0.05	-0.06	0.22	-0.25	-0.04	0.0	0.02
				0.0	0.75	0.74	.0.69	0.13	0.09	0.77	0.98	0.90
IDENT					1.00	0.15	-0.11	-0.49	-0.04	0.15	0.09	0.11
					0.0	0.30	0.45	0.01	0.78	0.30	0.53	0.44
PART						1.0	0.33	-0.12	0.21	0.27	0.54	0.22
						0.0	0.02	0.40	0.16	0.07	0.01	0.04
EXPRESS							1.00	0.24	0.09	0.12	0.52	0.30
							0.0	0.10	0.53	0.42	0.01	0.04
ANON								1.00	-0.03	-0.18	0.05	-0.24S
								0.0	0.82	0.23	0.72	0.11
PREFER									1.00	-0.06	0.33	-0.08
									0.0	0.67	0.02	0.61
READ										1.00	0.36	0.34
										0.0	0.01	0.02
SAT											1.00	0.31
											0.0	0.03
COM												1.00
												0.0

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DISCUSSION

There was no statistically significant difference among the three types of groups in the number of comments generated per person and the self-assessed measures (with the exceptions of two measures that evaluated the level of anonymity). This result is probably due to the relatively non-controversial nature of the task (generating ideas for the solution of the problem of parking on campus). Recent research has indicated that the topic can play a major part in the number of comments generated, satisfaction, and other measures (Aiken, in press). Greater differences among the three types of groups are likely to occur using more controversial topics (e.g., politics or race relations) or when employees and employers are placed in the same group. These and other suppositions are left for future research.

There are at least three limitations to the study. The task was relatively non-controversial. In addition, the ad-hoc groups of student subjects had knowledge of the topic and viewed it as important, but had little decision-making authority over the problem. Thus, they might not have been serious about the task. Finally, all of the groups met in a face-to-face environment and could see the members of their groups. Greater anonymity can be achieved by placing participants in different rooms, thus preventing their knowledge of group membership.

CONCLUSION

Anonymity can play a significant role in electronic meetings by fostering participation, satisfaction, and productivity. However, anonymity is not always important. The results of this study indicate that for a non-controversial task or when the group consists of peers, the presence of anonymity might not add any value. In fact, the subjects in the non-anonymous groups generated more comments and were more satisfied with the meeting process, although the differences were not statistically significant.

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APPENDIX 1

User #: _____   **Group #:** _____

Please circle your answers below. Thank you for your participation.

1. [AFRAID] I was afraid that others in my group would criticize my comments.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree

2. [EASY] It was easy to submit and read comments.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree

3. [KNOW] I know the members of my group well.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree

4. [IDENT] Others in my group could identify my comments.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree

5. [PART] All members of my group submitted comments.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree

6. [EXPRESS] I was able to express my opinion easily.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree

7. [ANON] The comments were anonymous.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree

8. [PREFER] I prefer this type of meeting to a traditional, verbal meeting.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree

9. [READ] I was able to read all of the comments my group wrote.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree

10. [SAT] I was satisfied with this meeting process.
    1   2   3   4   5   6   7
    Disagree   Neutral   Agree