EFFECTS OF GSS ANONYMITY AND GROUP MEMBER STATUS ON PRODUCTIVITY AND SATISFACTION

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ABSTRACT

A field experiment was conducted to determine the effects of GSS anonymity and status on group productivity and satisfaction. Professionals and management participated in GSS sessions to discuss ways to solve the problem of insurance fraud within their industry. Groups of four and five members interacted either with or without anonymity and either under equal status or unequal status. Anonymous groups generated more total comments, more unique ideas, and more ideas of higher rarity than did identified groups. Equal status group members were more satisfied than unequal status group members.

INTRODUCTION

The study of Group Support Systems (GSS) as an aid to group decision-making in organizations is important to organizational researchers for practical and scientific reasons [8] [11]. GSS are a promising vehicle for better managing groups. When meeting as a group, group members bring with them external status characteristics, which are derived from their formal position within an organization's hierarchy, personal reputation, community or social status (age, sex, or race) [3]. Some common problems experienced by decision-making groups include the extreme influence exerted by high-status members, the lack of acknowledgment of low-status members' ideas, and a low tolerance exhibited toward minority or controversial opinions [8]. Group members with low external status characteristics have difficulty achieving influence over group decisions [22]. Some group members are often reluctant to contribute, because of their shyness, low status, and/or the controversial ideas being discussed [8].

In a GSS environment, anonymity has been shown to play an important role in enabling group members to better participate, making group meetings more productive (see for a review, [24]). The conceptual framework of GSS anonymity [24] defines anonymity as the extent to which group members' contributions to the group are identifiable to the other group members or to others outside the group.

The theoretical model of GSS [6] describes several variables that affect group process and outcome, among them are GSS anonymity and group member status. The purpose of this research was to study how the anonymity component of a GSS and group member status interact and influence group productivity and group member satisfaction.

RESEARCH ON GSS ANONYMITY

GSS anonymity has been the subject of a great deal of research, and much of this research suggests that the effects of GSS anonymity are positive (see, for example, [1] [4] [8] [12] [20] [21][24]). Anonymity is believed to create an environment in which group members participate equally, vote their conscience, and participate more often than they might in a non-computerized environment where their contributions are more easily identified. With the anonymity component of a GSS, the fear of embarrassment, social disapproval, and the sanction of an ill-received remark may be greatly reduced. Anonymity thus enables group members to speak freely and contribute ideas openly and honestly without fear of direct reprisals, especially when participants feel concerned about their personal or professional security. In addition, anonymity promotes the honest, objective evaluation of contributions based solely on the merit of the idea and not the author. Consequently, participants should generate, and better evaluate more ideas and make better decisions.

Conversely, a fair amount of research on GSS anonymity suggests that the effects of anonymity may be negative (see, for example, [8] [12] [14] [21]). Anonymity may enable participants to be overly caustic in their evaluations of others and more blunt and assertive in their comments, which may heighten conflict within the group. Anonymity may afford group members an opportunity to hide, masking the individual's effort or lack of effort. As a result, participants may loaf and let others do the work. In addition, anonymity may filter out some communication and cause some political information often obtained in meetings to be lost.

An explanation for these differing arguments can be seen when one compares the results of laboratory experiments of GSS anonymity with those of field studies. The results from laboratory experiments of GSS anonymity are mixed. In some laboratory experiments, effects from GSS anonymity have been found. For example, several researchers [4] [13] [15] found anonymous group members generated more solution clarifications, critical and total comments, and questions about solutions than did groups working under identified conditions. Anonymous group members using a GSS were more critical, probing and more likely to embellish an idea than identified group members using a GSS. In one of the three studies, groups interacting anonymously also generated more unique, goal-directed ideas than did groups interacting without anonymity.

In other laboratory experiments, the researchers found no effects for GSS anonymity (see, for example, [2] [5] [10] [26]). In one study [2], although the subjects felt anonymity allowed them to effectively interact and reveal their true feelings, their actual performance did not match this perceived satisfaction. The lack of results suggested that a GSS does not appear useful for groups that do not have a vested interest in the task, an established history, or an inequitable hierarchy that might create a situation in which the anonymity component of a GSS would be needed.

The mixed findings from these laboratory experiments of GSS anonymity are in contrast with field studies of GSS anonymity (see, for example, [20] [21] [5]). These researchers studied users of GSS in a variety of organizations, at various levels within these organizations, involving a variety of tasks and group sizes. The methods used in these studies included participant observations, structured observations, and pre- and post-session questionnaires. In these field studies of GSS, researchers found stronger, more positive effects from GSS anonymity than did researchers using laboratory studies.
Field study researchers reported that because of GSS anonymity, group members appeared to express their true feelings without fear of social disapproval [20]. The participants' self-reports supported this. Group members using GSS reported that anonymity was an important, if not the most important, GSS

contribution [5]. Group members also reported that anonymity encouraged open and honest discussions, and they perceived that anonymity reduced organizational politics [5]. Group members also perceived that anonymity encouraged more participation, particularly from those with lower status [5]. The researchers concluded that GSS anonymity appeared to neutralize the effects of an authority hierarchy in the group [20] and that anonymity was a positive factor in encouraging broad-based participation [21]. In one study [21] the researchers also suggested that anonymity might heighten group conflict, because members became more blunt, assertive, and not as polite as in personal interactions.

UNDERSTANDING ANONYMITY'S EFFECTS

It appears that, depending on the setting, the effects of GSS anonymity can be positive, negative, or negligible. This fits with the results from laboratory experiments which suggest that a GSS does not appear useful for groups that do not have a vested interest in the task [12], an established history, or an inequitable hierarchy that might create a situation in which the anonymity component of a GSS would be needed [2]. This also fits with results from one field study [5], where members of peer groups reported that anonymity was less important than did members of groups of superiors and subordinates with formal power and status differences.

The richness and reality of the field setting appear to provide the environment in which GSS anonymity is more useful. These field environments tend to be places where individuals have a more vested interest in the task at hand, either because of some personal or professional stake in the task. Consequently, they feel more compelled to contribute. In addition, the threat of repercussions for ill- received contributions to the group is greater, and the potential disadvantages because of these ill- received contributions are stronger and more salient. Further, it appears that within the group the status of group members is important in determining whether GSS anonymity is more necessary and important. In the laboratory experiments group members were friends, acquaintances, or strangers; whereas, in the field studies, groups normally had a distinct, natural hierarchy of power and authority.

Some researchers have studied the status construct in GSS experiments (see, for example, [17] [23]), but in these laboratory experiments status was defined as "influence," operationalized as an artifact of group process, and treated as a dependent variable.

HYPOTHESES

In groups with unequal status, low-status members will have fewer opportunities to interact, be less likely to have their suggestions evaluated by the group, and have less influence on group decision-making. Status generalization is the process where external status characteristics order the internal status of a group and create an interaction disability for low-status members [22]. This process occurs whether or not the external status characteristics are related to the group task [3]. To reduce this disability requires techniques for overcoming the status generalization process [22]. We predict that GSS anonymity will overcome the status generalization process in groups with unequal members.

As has been argued in laboratory experiments and field studies on GSS anonymity, anonymity should allow more ideas to be generated during a meeting, because group members with low-status would contribute ideas more freely and openly. Anonymity should also promote the honest and objective evaluation of an idea based on the merit of the idea and not the contributor, because group members would more freely evaluate and criticize other members' ideas [4] [13] [15] [25]. In short, GSS anonymity should be most helpful under the conditions of unequal status described above [2] [5] [12]

[20] [21]. Further evidence for this is provided by the results of two laboratory experiments [17] [23], which showed that use of a GSS dampened status influence within groups.

In groups where the members are of equal status, when group members make contributions or criticize ideas of other members, they do not have to feel strongly restrained, nor do they have to severely fear disapprovals. With or without anonymity, group members should be able to contribute and criticize ideas more freely and more honestly. Anonymity should have minimal or negligible affect on group interaction or output [2] [5]. We thus hypothesize:

H_1: Groups whose members are unequal in status and anonymous will generate more total comments and unique ideas, more ideas of higher rarity, and more critical comments than will groups whose members are unequal in status and identified.

H_2: Groups whose members are equal in status will generate more total comments and unique ideas, more ideas of higher rarity, and more critical comments than will groups whose members are unequal in status.

H_3: Groups interacting under anonymity will generate more total comments and unique ideas, more ideas of higher rarity, and more critical comments than will groups interacting without anonymity.

In field studies and laboratory experiments of GSS, participants are generally satisfied with the anonymity component. We believe that in our field experiment group members unequal in status and anonymous should be more satisfied than group members unequal in status and identified. Anonymity should reduce the fear of embarrassment, disapproval, or sanction of an ill-received remark in groups with unequal status. Group members equal in status should be more satisfied than those that are unequal in status, because group members with equal status will not feel strongly restrained or severely fear disapprovals. Anonymous group members should be more satisfied than identified group members, because anonymous group members would be able to contribute ideas more freely and openly than would identified group members. Therefore, we hypothesize:

H_4: Group members unequal in status and anonymous will be more satisfied than will group members unequal in status and identified.

H_5: Group members equal in status will be more satisfied than will group members unequal in status.

H_6: Group members interacting under anonymity will be more satisfied than will group members interacting without anonymity.

RESEARCH DESIGN

An empirical, quantitative laboratory experiment, or a qualitative field study design, would each provide its unique disadvantages. There is a need for a controlled field experiment on GSS anonymity and status for which the precision and control of the laboratory are used with real participants, with real status differences, performing a task of importance and relevance to them. We can then see how the experimental findings from the field match with the mixed findings from the laboratory, whether positive or negative. We thus chose to conduct a hypothesis-testing, field experiment [16] using a 2 X 2 factorial design (crossing anonymity with group member status) with random assignment and equivalent groups.

Status - Group members were either equal in status or unequal in status. For this study, the most easily measured external status characteristic was the position of the subject in the organization's hierarchy of reporting and responsibility. Thus, we operationalized group member status such that members of equal status had positions at the same level of reporting and responsibility within the organization. Members of unequal status had positions at different levels of reporting and responsibility within the organization. Before the experiment began, subjects completed a questionnaire in which they answered questions related to their position within the organization. The authors used the questionnaires to assign subjects to groups in which all members were equal in status, or to groups in which one or more of the members had a higher level of status within the organization. For groups having a higher level of status, 40% had one manager present, 40% had two, and the remaining 20% had three managers present. 40% of the groups having a higher level of status included two levels of managers. As suggested by pilot testing, to make the status manipulation stronger we had the participants stand up at the beginning of the sessions and state their name, department, and job title.

Nearly all the group members knew each other from having worked together prior to the study. In addition, fifty percent of the groups contained all members currently from the same department; 22% had three out of four, and 28% contained two out of four members from the same department. With the above manipulations, we believed we created a structure where status mattered.

Anonymity - We used the definition of GSS anonymity provided by [24] - the extent to which group members' contributions to the group are identifiable to the other group members or to others outside the group. While using the GSS, group members were either anonymous or identified. The GSS software was set such that the group members in the anonymous condition submitted their ideas and comments without identifying themselves. In the identified condition, group members added their first name, and the first initial of their last name, to the beginning of all ideas and comments submitted during the GSS session.

Following the methodology used by [4] [13] [15], there were five dependent variables used in this experiment: total number of comments generated, number of unique ideas generated, rarity of ideas generated, number of critical comments, and satisfaction with using a GSS. To operationalize the first four dependent variables, we used a content coding scheme presented by [4], which has consistently produced high rates of reliability. Given the consistency and high reliability of this process, we did not compute additional reliability measures for our use of the process. Two raters analyzed comments each group produced during the GSS session and then independently classified each comment into one of several categories, such as proposed a solution, made a critical remark, and so on. The raters then compared ratings and came to consensus on any differences.

Unique ideas consisted of proposed solutions, minus redundancies and frivolous ideas [12]. To measure rarity of ideas generated, we first counted the number of times each idea appeared among all groups. To compute rarity, we then used the reciprocal of the count for each idea. For example, an idea proposed only once had a rarity score of 1.0, while the more common ideas had scores approaching zero [12]. A critical comment was an expression of opposition to a proposal with, or without, evidence or argument. We also followed the methodology used by [4] [13] [14] to measure the fifth dependent variable, satisfaction with using a GSS, by using the same post-experimental questionnaire. Each member answered 15 questions on a five- point Likert scale. One question measured overall satisfaction. Other questions measured a group member's perception of the meeting process. To determine the average

satisfaction rating, the authors summed the values of the fifteen satisfaction-related questions for each group member [9].

For statistical analysis of the relationships among the dependent and independent variables, MANOVA was used for the four dependent measures of group output: total number of comments generated, number of unique ideas generated, rarity of ideas generated, and number of critical comments. ANOVA was used for satisfaction with using a GSS, the group member dependent variable.

The post-experimental questionnaire contained questions used to check the anonymity and status manipulations. Two questions used to check the anonymity manipulation were, "Was it possible to trace comments to people who proposed them?" and "Were other participants in your group able to trace comments to people who proposed them?". Participants answered each question with either "Yes = 3, Don't Know = 2, or No 1" [4].

Three questions used to check the status manipulation were, "Were members of your group equal in status, as related to their job descriptions at work?", "Did you feel pressured by another group member(s) with higher status?", and "Were you afraid to express your ideas, because of a higher status member(s) in your group?". Participants answered each question with either "Yes = 3, Don't Know = 2, or No = 1".

We held constant two variables for all groups during the experiment: the task and group size. The authors selected the insurance fraud task, an idea generating task, which was defined as a creativity task (task type two) involving generating ideas or alternatives [19]. Best's Review and the Insurance Information Institute described insurance fraud as one of the most important issues confronting the insurance industry. Subjects in this study were managers and professional employees of an insurance company. These insurance company employees dealt with this issue on a daily basis and all had thoughts and ideas on this major issue confronting their industry. Group size varied between four and five members. Following a common practice for GSS experiments, we invited five potential participants per session in order to guarantee that at least four showed up.

EXPERIMENTAL SETTING AND PROCEDURES

All sessions took place in the personal computer (PC) laboratory. As part of the meeting room facility, the PC laboratory is a normal setting for groups to perform tasks, such as groups meeting to receive training on PC software. This setting satisfies the definition for a field experiment [16, p. 372]. The PC laboratory consisted of six personal computers arranged classroom style on two rows of tables. The authors inserted privacy panels between the six PCs and between the two rows of tables. A participant was not able to see other participants' personal computer screens or keyboards. Whenever possible, participants sat at alternating PC's to minimize distracting one another during a session. The PC laboratory contained no windows, which further prevented distractions.

A total of 75 subjects in 18 groups participated in this experiment. All subjects were employees and were either managers or professionals. The authors invited potential participants from departments related to selling, underwriting, claim, credit, audit, policy processing, internal audit, and education.
Subjects completed copies of a pre-experimental questionnaire. The authors used the questionnaires to determine participants' levels of computer literacy, willingness to participate, and times available to participate, as well as other personal attributes [1]. The authors used the questionnaires to assign subjects randomly to groups in which all members were equal in status, or to groups in which one or

more of the members had a higher level of status within the organization. The authors assigned equal and unequal status groups randomly to groups in which all members were anonymous or identified.
To ensure uniformity during the sessions, the authors conducted all sessions using a standard script. Each subject had a copy of the standard script and followed along as the authors read aloud the set of instructions. At the beginning of the session, the subjects received training on how to use the hardware and GSS software. They practiced using the hardware and software by performing an idea generating warm-up task. We then introduced the insurance fraud task, encouraged the subjects to generate as many ideas as possible to solve the problem of fraud in the insurance industry, and we emphasized that the case should not be discussed out loud. The instructions stated that a panel of two raters, who would separate the ideas from other comments and assign a quality rating to the ideas, would review ideas and comments. A thirty minute brainstorming session followed, during which time the subjects used the GSS to generate as many solutions to the task as possible. Subjects completed a post-experimental questionnaire, which the authors used to assess subjects' reactions to the session. The subjects were then debriefed and released.

The GSS software used was the Brainwriting tool from VisionQuest™, version 2.1, by Collaborative Technologies Corporation. The hardware used consisted of five IBM compatible personal computers connected to an IBM PC server via a token-ring local area network (LAN).

RESULTS

A total of 75 subjects in 18 groups participated in the experiment. The average age of the subjects was 38 years. 61% of the subjects were female, and 39% of the subjects were male. The subjects were managers or professional employees. 24% of the subjects were managers, and 76% were professional employees. Table 1 shows the relationship between the number of groups and subjects, and the independent variables anonymity and status.

TABLE 1. GROUPS AND SUBJECTS BY INDEPENDENT VARIABLES

	Status	
	Equal	Unequal
Anonymous		
Number of Groups	4	5
Number of Subjects	17	21
Identified		
Number of Groups	4	5
Number of Subjects	16	21

From the post-experimental questionnaire, the authors used subjects' responses to questions to determine how important the subjects thought the insurance fraud task was. Table 2 contains means and standard deviations for each of the three task importance questions.

TABLE 2. MEANS AND STANDARD DEVIATIONS FOR TASK IMPORTANCE QUESTIONS

	M	SD
Important Problem?	4.733	0.577
Important to Generate Solutions?	4.520	0.665
Useful Ideas to Solve Problem?	3.967	0.832

Means for each of the three task importance questions were all well above the mid-point on the five-point measurement scale. The results show that the insurance fraud task was important to subjects in all conditions.

To test the subjects understanding of manipulations of anonymity and status, the authors used subjects' responses to questions in the post-experimental questionnaire. Responses to the anonymity manipulation questions showed that all identified subjects understood the manipulation. 100% of identified subjects stated it was possible to trace comments to people who proposed them, and 95% stated others within their group were able to trace comments to people who proposed them.

The majority of anonymous subjects understood the anonymity manipulation. 76% of anonymous subjects stated it was not possible to trace comments to people who proposed them. However, anonymous subjects were unsure if others within their group were able to trace comments to people who proposed them, because 82% answered 'don't know' to this question.
Responses to the status manipulation question showed that almost all of the equal status subjects understood the manipulation. 97% of the equal status subjects answered "yes" to the question, "Were members of your group equal in status, as related to their job description at work?" The majority of unequal status subjects, 55%, answered "no" to the same question, indicating a weaker manipulation among unequal status subjects.

The inter-rater reliability of the Connolly et al. [4] content coding scheme has been reported to consistently be in the 94% to 95% range of rater agreement. Given our numerous previous experiences with the content coding scheme and the fact that we followed the content coding scheme to the letter for this study, a separate inter-rater reliability for this study was deemed to be not necessary. Connolly et al. [4] did not, however, report the reliability coefficient of their survey instrument, so we calculated this for our use of their survey instrument and found it to be reliable (Alpha = .8943).

Table 3 contains a summary of results for the independent and dependent variables. Anonymous groups generated more total comments ($F = 4.289$, $P = 0.057$), more unique ideas ($F = 4.248$, $P = 0.058$), and more ideas of higher rarity ($F = 5.560$, $P = 0.033$) than did identified groups. The pattern supports hypothesis H_3. Equal status group members were more satisfied than were unequal status group members ($F = 5.560$, $P = 0.033$, 1,71 d.f.), which supports hypothesis H_5. There was no evidence to support the following research hypotheses: H_1, H_2, H_4, and H_6.

TABLE 3. RESULTS FOR THE INDEPENDENT AND DEPENDENT VARIABLES

	Equal Status				Unequal Status				
	Anonymous		Identified		Anonymous		Identified		Sign Level
Measure	M	SD	M	SD	M	SD	M	SD	S A X
Total Number of Comments	52.75	25.42	36.25	6.24	64.80	22.62	42.40	20.27	--- * ---
Number of Unique Ideas	35.50	18.45	24.75	1.26	44.60	15.50	29.00	13.17	--- * ---
Number of Higher Rarity Ideas	21.59	15.30	12.28	2.98	25.27	9.89	13.69	6.05	---** ---
Critical Comments	1.50	1.29	0.75	0.96	3.60	5.32	0.40	0.89	--- --- ---
Satisfaction	57.77	9.61	59.38	7.73	53.90	9.64	53.48	9.09	** --- ---

For significance, the S column indicates significant main effects for status, the A column indicates significant main effects for anonymity, and the X column indicates a significant interaction effect. **p < .05; *p < .10.

DISCUSSION

In this field experiment, anonymous groups generated more total comments, more unique ideas and more ideas of higher rarity than did identified groups, which is consistent with earlier GSS laboratory experiments [13] [4] [15] . These results also fit with those of laboratory experiments where there were no effects of GSS anonymity (see, for example, [2] [12]), given that the researchers in these other studies explained that there were no findings because there was little or no reason for anonymity to be important in these environments.

Replicating the results of the laboratory experiments on GSS anonymity by Jessup and his colleagues is important given that this was a true field experiment in a business organization, using managers and professionals as subjects and having them complete a non-contrived task. In comparing early experimental and field studies involving GSS's, findings from field studies should not be generalized to use of GSS's in experimental settings, and vice versa [7]. The parallel results from this field experiment of anonymity are a step in the direction of overcoming shortcomings of early field and experimental studies and drawing together field and laboratory studies, as noted by [7].

There were no statistically significant effects for status on number of total comments, number of unique ideas, number of higher rarity ideas or critical comments. It may be that status is important, but it was not operationalized well enough in this experiment. Perhaps we did not manipulate status strongly enough or provide a task for which status is important. Alternatively, perhaps the instructions for manipulating status were not perceived by subjects as the authors intended. As the results of the manipulation checks show, a very high percentage of subjects in the equal status condition reported "yes," those members in their group were of equal status. Conversely, only 55% of the group members in the unequal status condition answered "no" to the same question, indicating a weaker manipulation

among unequal status subjects. We believe that the manipulation worked adequately. The procedure we used to manipulate status was quite straightforward, and subjects were paying attention when we had them introduce themselves to each other out loud.

To test whether or not our measure of status was adequate, we conducted a post-hoc analysis of status using available data to measure other aspects of status, which were identified in the literature. We also operationalized status with more sensitive, continuous variables rather than as a single binary variable. To measure the level of status in each group we used the following alternative formulas:

1. Type of manager: based upon the level of responsibility and reporting within the organization's managerial hierarchy; unit manager = 1, manager = 2, and director = 3; summed the type(s) of manager present per session; groups ranged from 0 to 7.

2. Number of managers: based upon the number of managers present per session; each manager given a value of 1; summed the number of managers present per session; groups ranged from 0 to 3.

3. Age of managers: based upon managers' actual ages; summed ages of managers present per session; groups ranged from 0 to 134.

4. Experience of managers: based upon number of years of managers' working experience; summed experience of managers present per session; groups ranged from 0 to 50.

5. Gender of managers: based on managers' gender; assigned I to female manager and 2 to male manager; summed assigned values for gender of managers per session; groups ranged from 0 to 6.

6. Combined status: sum total of all values for continuous status measures.

We repeated the analysis of variance for these new status variations and found that this did not change the pattern of our results, thereby matching our initial approach.

One other explanation for the original, nonsignificant results for status is that status isn't the key construct. Perhaps there are other factors operating within a group that would more strongly cause certain members to be afraid to contribute. It may be as simple as an overpowering group member who would ridicule others for their ideas, regardless of that person's status within the organization. Alternatively, it may be that, at the individual level, self-confidence or personal security are more likely to cause a person to be afraid to contribute, regardless of status. Given the compelling arguments for status as an important variable in this setting, and given that status is likely to correlate with these other variables, this explanation is not as likely.

A more plausible explanation for the nonsignificant output results is that while subjects could clearly see that there were members of their group that were from a different level in the organization, employees from this organization do not believe that this constitutes a difference in "status." Further, it may be that the professionals and managers in this study were too democratic for status differences to mean much, and/or group members may have been too comfortable working with first level managers, with whom they may have developed a rapport. Our prior experience with the employees of this organization, which is substantial, suggests that this is the case.

Further evidence that these groups were civil is provided by the analysis of critical comments. Contrary to our hypothesis, anonymous groups were not more critical than identified groups, which is not consistent with prior empirical studies where anonymous groups were more critical than identified groups [13] [15] [25]. In addition, the number of critical comments was generally low for all groups. The business professionals and managers participating in this field experiment were less critical than were subjects from our prior laboratory experiments with student subjects. Student subjects are generally younger, meet as a group one time for the research experiment, and then see little or nothing of each other after the session. The business professionals and managers in this experiment may have been less critical because of their organizational culture, professional maturity, and because they knew they had to work with each other after the session.

Some final evidence of the civility of these participants is provided by the results for the satisfaction measures. Contrary to our hypothesis, anonymous group members were not more satisfied than were identified group members. Generally, all participants were relatively satisfied with the experience. Apparently, the interaction was not of a type where the group members would be more satisfied under anonymity.

Interestingly, there was a statistically significant effect for status on group member satisfaction. Group members equal in status were more satisfied than group members unequal in status. To better understand why, we analyzed responses to each question on the post-experimental questionnaire and found that the responses of group members equal in status were significantly higher (significant at the .05 level) than were the responses of the group members unequal in status on the following items: the participation in the discussion was evenly distributed, the behavior of the group was goal directed, the interpersonal relationships among the participants were healthy, participants dealt systematically with the issues, participants initiated discussion on relevant issues, and members were satisfied with the quality of the group's solutions. This suggests that, while the members of this organization may in fact not be influenced to a great degree by organizational status in terms of their actual output in the GSS sessions, the status manipulation worked, and there were significant differences, at least in terms of perceptions, between equal and unequal status groups.

IMPLICATIONS

The results of this field experiment confirm the quantitative finding from laboratory experiments, and the qualitative finding from field studies, that GSS anonymity is useful. In this field experiment, while performing an idea generating task in a laboratory setting, anonymous groups of business professionals and managers generated more total comments, unique ideas and ideas of higher rarity than did identified groups. This experiment suggests that we may need to either think differently about the status construct and/or work toward a better operationalization of status in experimental settings. While there was no significant effect for status on real output, groups that were equal in status were more satisfied than were groups that were unequal in status.

One explanation is that we chose the right construct and manipulated it correctly. There is compelling evidence in the literature to suggest that an organizationally based status variable is important. In addition, our manipulation of status was straightforward and the results of the manipulation check suggest that it was understood by most subjects. Further, the results of our post- hoc analysis using alternative status measures matched the results of our original analysis. The implication is that, for settings like the one studied here, organizationally based status may not be important in terms of its effects on real group output, though being in equal status groups made participants feel better about their

session. Further, status differences do not seem to be important, in terms of real output, for groups like ours that are mature, professional business people with real, lasting relationships with each other that transcend the experiment.

Another avenue for exploration is that we chose the right construct, but we did not operationalize it well. Our manipulation of status, while straightforward to subjects, may not have been strong enough. Perhaps we needed to include individuals with a higher level of responsibility than managers in an organization did. For example, including senior and executive vice presidents, or selectively choosing managers based on their leadership styles, may strengthen the status manipulation. Alternatively, we may have chosen a more sensitive task which would have made status differences more important. A task that would evoke different preferences between status levels with direct implications for members (e.g., bonus allocations, promotion policies, etc.) may be more likely to surface status effects. In future field experiments of this type, researchers might also increase the number of groups to determine if a larger sample size would produce a statistically significant result for status.

It is possible that organizationally based status is not as important as other phenomena. Perhaps status based on seniority or expertise is more important. Alternatively, anonymity may be more important for individuals who are afraid to contribute, regardless of the setting. In such a case, we should study individual level phenomena, such as self-confidence or dominance versus submissiveness. Researchers need to isolate these other factors and manipulate them along with anonymity to determine if they, rather than organizationally based status, are the real factors keeping some group members from contributing.
While this study suffered the small sample size inherent in field experimentation, one thing is clear. It was useful to draw from the results of quantitative laboratory experiments and qualitative field studies on GSS, and then build theory to be tested in a field experiment. Field experiments such as this are difficult and costly, but they help to integrate and validate these other types of research. In this field experiment we attempted, as best we could, to simultaneously maximize the three conflicting research "desiderata" [18] - generalizability, precision, and realism.

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