



# Group Supports Systems as Handmaidens of Innovation: The Removal of Barriers to Creative Idea Generation Within Small Groups

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## INTRODUCTION

In today's competitive business environment, managers are frequently called upon to generate creative ideas as solutions to business problems. Embracing creativity, many successful businesses are innovators, "produc[ing] ideas or products that have changed their industries" ("Fear of the Unknown," 1999, p. 61). Although "creativity" and "innovation" are often used synonymously, scholars have distinguished these two terms. Virtually all definitions of creativity involve "a combination of originality and usefulness" (Bostrom and Nagasundaram, 1998, p. 2), whereas innovation refers to the process whereby new creative ideas are put into practice (Couger, Higgins, and McIntyre, 1990, 1993; Frame, 1989; Rickards, 1988).

A major deterrent to creativity within organizational decision-making groups, as well as in focus groups, is social influence. Idea generation, brainstorming, decision making, problem solving, and other interactions in small groups frequently result in intimidation of some group members by others. In this context, intimidation refers to the instilling of fear that deters, interferes with, or otherwise inhibits the free expression of one's ideas. Examples include social pressure resulting from status or other social influence and fear that one's ideas will be devalued when evaluated by others. Intimidation hinders the equal participation of all group members, constraining the creativity of lower-status, junior, shy, or female members.

## INTIMIDATION AS A DETERRENT TO PARTICIPATION AND CREATIVITY

The problem of intimidation as a barrier to creative idea generation is present in various small group settings. In groups having brainstorming sessions or otherwise involved in generating creative solutions, lower-status members may be influenced by higher-status members (Walker, Iardi, McMahon, and Fennell, 1996). This finding is in line with research that indicates that in face-to-face groups higher-status individuals talk more than those of lower status (Garton and Wellman, 1993). Shy group members are frequently inhibited by other group members (see Utz, 2000), thereby participating less in group discussion and generating fewer creative ideas.

Gender-based differences with respect to interaction behaviors in mixed gender groups create an intimidation-as-a-barrier-to-creativity problem in middle management when women members of small task-oriented groups participate in idea generation, brainstorming, and other decision-making sessions. Specifically, in these mixed gender groups, women tend to suppress their ideas (Craig and Sherif, 1986) in part because of evaluation apprehension (see Meeker and Weitzel-O'Neill, 1977). Smith-Lovin and Brody (1989) found that in mixed gender groups, men interrupt women more frequently than they do other men, a mode of interaction that hinders free expression of ideas (see also Tannen, 1994, pp. 53-83). Moreover, men tend to be more vocal and participatory than women in these settings and hence tend to dominate the decision-making process (Herschel, 1994; Klein and Dologite, 2000; Leaper, 1998; Wood, 1994). As women comprise half of middle management, and of the workforce in general (Conlin and Zellner, 1999), the unequal participation of women in groups poses a

serious challenge to upper management, who are deprived of creative ideas, unconventional opinions, and controversial views.

Expectation states theory suggests that inasmuch as society accords men a higher status than women, men's contributions to the group task will be perceived as having greater value than those of women even in situations when men, in fact, make poorer contributions (see, e.g., Sell, 1997), and thus women will be reluctant to express their ideas. Consistent with this theory, Tannen (1995) reported the attribution of ideas to a male member of a focus group when, in fact, the original contributor was a female member, with the male member merely picking up on the idea and supporting it in group discussions.

The intimidation problem is faced by focus groups — interactive discussion groups led by a moderator, which are frequently used in market research — where the opinions and creative contributions of shy and reserved members may be suppressed by group interaction dominated by more vocal individuals (Riley and Jorgensen, 1999, p. 6; see also Albrecht, Johnson, and Walther, 1993, p. 57). In addition, the ideas generated by higher-status focus group members tend to dominate the discussion and thus discourage lower-status members from speaking (Stewart and Shamdasani, 1990, pp. 45-46). Moreover, men in focus groups tend to speak more often and with greater authority than women ("peacock effect"), a situation that is a potential source of irritation to women (Krueger, 1994, p. 78) and one that may inhibit women from generating creative ideas, voicing their opinions, and otherwise participating fully in group discussions and deliberations. In line with the above-mentioned barriers to participation and creativity that plague focus groups, one study found that more ideas are generated in individual depth interviews than in focus groups (Fern, 1982).

## ANONYMOUS INTERACTIONS IN GROUP SUPPORT SYSTEMS

Computer-mediated communication (CMC), a tool in the arsenal of information technology, offers a solution to the problem of intimidation as a barrier to creative idea generation in small groups. Specifically, the use of group support systems (GSS), or groupware, which allows for anonymous interaction, provides an environment in which social cues (e.g., social presence, status, gender, seniority) are absent, thereby ensuring that the contributions of each group member are judged solely on merit and not on the external characteristics of the contributor. GSS is an interactive computer-based information system that supports and structures group interaction, including idea generation and problem solving (see, e.g., Huber, Valacich, and Jessup, 1993; Poole and DeSanctis, 1990; see also Fjermestad and Hiltz, 2000; Nunamaker, 1997). GSS, then, can be used to enhance creativity by assisting in the idea generation process.

Hayne and Rice (1997) summarize the literature on GSS and anonymity as follows: "Efforts by many researchers ... have generally found an increase in production and satisfaction when anonymous group brainstorming is used. Other advantages of anonymous participation include decreased evaluation apprehension, decreased member domination, decreased conformance pressure and decreased status competition, which can lead to increased exploration of alternatives and

surfacing of assumptions" (p. 431). Thus, GSS, with its anonymity feature, promotes increases in participation, creativity, and productivity and fosters the expression of diverse opinions.

#### Use of GSS in Small Task-Oriented Groups Within Organizations

GSS may be helpful to organizations, which rely on small task-oriented groups for activities such as idea generation, brainstorming, and decision making. Despite the reliance on groups by the business world, women in management operate at a particular disadvantage (Martin and Shanahan, 1983) and have their input devalued because of gender stereotyping (Gopal, Miranda, Robichaux and Bostrom, 1997). By having the anonymity-featured GSS assist these groups in their tasks, the organizations foster the equal participation of all group members and, in turn, benefit from the divergent viewpoints and insights that result therefrom.

Klein and Dologite (2000) found empirical support for the notion that in providing an environment that masks the external characteristics of group members, GSS ensures that the contributions of each group member will be judged solely on merit. In an experimental study, Klein and Dologite reported that mixed gender groups using GSS generated ideas that were as innovative as the ideas generated by all-male or all-female groups using GSS. Explaining their findings by reference to expectation states theory, Klein and Dologite have suggested that the anonymity feature of GSS eliminates gender as a status characteristic and thus equalizes participation by allowing for the evaluation of ideas without the distorting influence of gender.

Similarly, the anonymity afforded by CMC should increase the participation and creative idea generation of shy group members. In a study on the anonymity of the Internet, Utz (2000) argues that this is so because shy group members "cannot be judged primarily by their appearance [and] they do not have to fear any consequences offline ...." In another study on anonymous online communication, Roberts, Smith, and Pollock (1997, p. 2) found that "individuals who self-identified as shy reported that they were less inhibited and less conservative in on-line environments." Along the same lines, the anonymity made possible by GSS is expected to increase the participation of shy persons and to facilitate the generation of creative ideas by them.

#### Use of GSS in Focus Groups

The use of GSS to assist focus groups will foster increased participation by all members, resulting in the generation of more — and more innovative — ideas. Conducting a study in which GSS-supported focus groups were compared with traditional focus groups, Parent, Gallupe, Salisbury, and Handelman (2000) found that focus groups using GSS generated a greater number of ideas and had better quality of ideas. Parent et al. suggested, as a reason for their findings, that GSS allows all focus group members to have an equal voice, with the dominant personalities losing their dominance. With respect to female group members, the implementation of GSS in focus groups may eliminate the "peacock effect," whereby male group members participate with greater frequency and more authority (see above), thereby ensuring equal male-female participation rates and encouraging creative contributions from all group members.

### SHORTCOMINGS OF ANONYMITY-FEATURED GSS

In addition to its aforementioned advantages, anonymity may also have negative effects for some GSS-supported groups. Potential disadvantages include social loafing (e.g., free riding) and flaming (Jessup and George, 1997). Thus, anonymity may not be helpful in all circumstances. It is suggested that future studies examine under what conditions anonymity-featured GSS is most effective.

### CONCLUSION

Given the scholarly literature, it is expected that the use of computer-mediated communication with anonymous interaction capability will counteract the distorting effects of status, seniority, and gender in group interactions and thereby neutralize the barriers to participation and creative idea generation within small groups.

The anonymity feature of GSS allows group members to assess ideas solely on merit and not on the basis of the external characteristics of the originator, thereby counteracting the reluctance of group members to contribute their ideas. The intimidation effect, then, will be eliminated and a barrier to creative idea generation will be removed.

The current body of research on the effects of GSS on creative idea generation is not well developed. The pioneering studies that have been conducted to date have yielded mixed results (for a comprehensive literature review, see Bostrom and Nagasundaram, 1998; for a recent paper, see Klein and Dologite, 2000), while some theoretical papers have proposed various conceptual frameworks (see, e.g., Fellers and Bostrom, 1993). Accordingly, further experimental studies are required to confirm the suggested relationship between the use of GSS and creative idea generation.

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