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Abstract:
Researchers of group creativity have noted problems such as social loafing, “production blocking,” and especially, evaluation apprehension (Paulus, 2000). Thus, brainstorming techniques have specifically admonished people “not to criticize” their own and others’ ideas, a tenet that has gone unexamined. In contrast, there is research showing that dissent, debate and competing views have positive value, stimulating divergent and creative thought (Nemeth, 2002, in press). In this experimental study, traditional brainstorming instructions admonishing people not to criticize were compared with instructions encouraging people to debate and even criticize. A third condition offered no specific instructions. This study was conducted both in the United States and in France. Results show the value of both types of instructions, but, in general, debate instructions were superior to traditional brainstorming instructions. Further, these findings hold across both cultures. Results are discussed in terms of the positive value of encouraging debate and controversy for idea generation.

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The Liberating Role of Conflict in Group Creativity: A Cross Cultural Study

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ABSTRACT

Researchers of group creativity have noted problems such as social loafing, “production blocking,” and especially, evaluation apprehension (Paulus, 2000). Thus, brainstorming techniques have specifically admonished people “not to criticize” their own and others’ ideas, a tenet that has gone unexamined. In contrast, there is research showing that dissent, debate and competing views have positive value, stimulating divergent and creative thought (Nemeth, 2002, in press). In this experimental study, traditional brainstorming instructions admonishing people not to criticize were compared with instructions encouraging people to debate and even criticize. A third condition offered no specific instructions. This study was conducted both in the United States and in France. Results show the value of both types of instructions, but, in general, debate instructions were superior to traditional brainstorming instructions. Further, these findings hold across both cultures. Results are discussed in terms of the positive value of encouraging debate and controversy for idea generation.

Key words: creativity, brainstorming, culture, dissent, conflict, cohesiveness, divergent thought

The Liberating Role of Conflict in Group Creativity: A Cross Cultural Study

Most research on group creativity has concentrated on the individual rather than the group, generally focusing on the problems and sub-optimality of groups (McGrath, 1984). Most research also tends to emphasize harmony and the elimination of evaluation apprehension for creative idea generation (Diehl & Stroebe, 1987; Paulus & Dzindolet, 1993). Thus, techniques such as brainstorming include a specific instruction "Not to criticize" (Osborn, 1957). In contrast, there is considerable research documenting the value of conflict and confrontation of differing viewpoints. In particular, minority opinions, consistently maintained, have been found to stimulate divergent thinking, creativity and better decisions (Nemeth, 1995; 1997). In this paper, we propose changing the time-honored brainstorming instructions and, rather than admonish people not to criticize, we propose that the encouragement of debate—even criticism permits the generation of more creative ideas. Further, to test the applicability of such findings, we have conducted this study in both the United States and in France.

Theory and Hypotheses

Techniques for Enhancing Group Creativity

Most of the research literature on creativity focuses on the individual, especially on personality characteristics and thought processes that distinguish high vs. low creative individuals or on social factors that aid or hinder individual creativity (Amabile, 1983; Baron, 1969; Nemeth & Nemeth, 2001). There is notably little research on *group* creativity (Kasof, 1995; Paulus, Brown, & Ortega, 1999) despite the fact that organizations heavily depend on teams or groups to generate solutions to problems (West & Farr, 1990). The research that does exist focuses on the sub-optimality of performance by groups relative to individuals working alone (Sternberg, 1995). Compared to individuals working alone, groups generate substantially

fewer solutions (McGrath, 1984) and the reasons generally suggest ways in which interaction hinders creativity (Paulus, Larey, & Dzindolet, 2000). Among the reasons for the deficits in groups are well-researched phenomena such as evaluation apprehension and production blocking (Diehl & Stroebe, 1987), social loafing (Karau & Williams, 1993) and conformity (Larey & Paulus, 1999). Thus, some attempts to raise group creativity have focused on the reduction of some of the "problems" with groups.

One such technique, brainstorming, has been widely used for over 50 years, especially in work organizations (Osborn, 1957). It is in fact the mantra for companies such as IDEO, arguably the best design firm in the world (Hargadon & Sutton, 1997). The claim is that brainstorming instructions improve group creativity because they address issues of evaluation apprehension and social loafing. To lower such apprehension and loafing, individuals are specifically encouraged to emphasize quantity of ideas and more importantly, they are specifically instructed NOT to criticize their own or others' ideas. Rather, they are encouraged to "freewheel" as well as to build upon and elaborate others' ideas.

As mentioned previously, researchers of group creativity and the brainstorming technique have tended to favor harmony and have long assumed that conflict, especially anything resembling criticism, reduces group creativity. Thus, there has been considerable emphasis on the elimination of such criticism and the concerns about evaluation that accompany it. As such, the specific instruction not to criticize one's own or others' ideas is *central* to the brainstorming technique.

The actual research on brainstorming, however, is mixed as to whether or not brainstorming instructions increase group creativity relative to no instructions (Taylor, Berry, & Block, 1958; Dunnette, Campbell, & Jaastad, 1963). In general, brainstorming instructions do

enhance idea generation relative to no instructions (Parnes & Meadow, 1959). What the research literature does show consistently is that groups, even under brainstorming instructions, rarely achieve the level of the individuals. If both individuals and groups are given brainstorming instructions, "individuals working separately generate many more, and more creative (as rated by judges) ideas than do groups, even when the redundancies among member ideas are deleted" (McGrath, 1984, p. 131).

One of the problems is that, while individuals are instructed to refrain from criticism, they may still worry about negative evaluations. Thus, the argument is that evaluation apprehension is still to be avoided or reduced; however, the admonition against voicing criticism does not eliminate the apprehension that one is being silently criticized. Camacho and Paulus (1995) lend some credence to this notion by finding that groups composed of "high-interaction anxious" individuals showed poorer performance in a brainstorming session than did groups composed of "low-interaction anxious" individuals." Of importance is that this is a group phenomenon. Individuals who are highly anxious in interactions show poor performance in groups but this individual difference measure did not differentiate performance at the individual level.

Emphasizing the Value of Dissent and Conflict

While brainstorming instructions focus on the elimination of criticism and concerns about evaluation, it is of interest that proponents of another technique, the Nominal Group Technique, make quite a different argument (Delbecq, Van de Ven, & Gustafson, 1974). The Nominal Group Technique (NGT) has individuals work separately in the first stage and then interact as a group in the second stage. The presumption is that groups tend to get involved in social relations and, as a result, show a relative lack of focus on the task and a tendency for conformity. Thus,

this technique emphasizes the individual level for idea generation and recommends groups for the evaluation and implementation stages (see McGrath, 1984). According to proponents of this technique, one of the problems of interacting groups is that they tend to *avoid* conflicts between members' ideas, or smooth them over, and spend most of their time discussing non-controversial issues (see generally McGrath, 1984, p. 129). The implication is that confrontation of competing views is to be desired.

Other research also posits the potential value of conflict, especially conflict that is related to the task rather than the person. In a longitudinal study by Jehn and Mannix (2001), for example, high performing teams were those that had low levels of relationship conflict but increasing levels of process conflict. Such teams had high levels of trust and respect and they had "open discussion" norms around conflict. Such an orientation is also evident in work by Postmes, Spears and Cihangir (2001) who found that "critical" norms improved quality of decisions while consensus norms did not. The difference between the two norms had to do with the valuing of shared vs. unshared information. It was the "critical" norms that valued the non-shared information.

The notion that groups perform better when they share and even confront differences bears some resemblance to the research on the value of dissent and diversity. Diversity is often found to aid the quality of decisions, presumably because of the multiple perspectives that it provides (Williams & O'Reilly, 1998; Milliken & Martins, 1996). The effectiveness of minority dissent is presumed to rely on the cognitive conflict that it engenders and there is now considerable evidence that it stimulates divergent thinking and enhances the quality of thought and decisions of the group (Nemeth, 1997; 2002, in press). We will expand on this literature as it provides the basis for the present studies.

Minority Dissent and Divergent Thought

It should be pointed out that the original work on minority influence (Moscovici & Faucheux, 1972; Moscovici, 1980; Wood, Lundgren, Ouellette, Busceme, & Blackstone, 1994) concentrated on attitude change (see generally Nemeth, 2002, in press) while the current approach stems from the tradition that emphasizes quality of judgment and decisions and which provides different predictions about cognitive activity stimulated by majorities vs. minorities (Nemeth, 1976; 1986). That line of research posits that disagreement, whether it comes from a majority or minority of individuals, induces cognitive activity; people think more about the issue. However, the nature of that thought differs as a function of the source. In response to a *majority* position, people think convergently from the perspective of the majority. Thus, they search for information that corroborates the majority position, utilize the majority strategy in problem-solving, focus on the issue from the majority view and tend to adopt the majority position as well. Conflict is resolved early and easily by conforming both in thought and stated position (Nemeth, 1995; 2002, in press).

In contrast, minorities stimulate divergent thinking. Exposed to minority dissent, people do not necessarily scrutinize the minority message. What they do is consider the issue from multiple perspectives, one of which is that posited by the minority. This is the link between dissent and quality of thought and decisions at the individual and group levels. People exposed to minority dissent search for information on all sides of the issue (Nemeth & Rogers, 1996); they utilize all strategies in the service of performance (Nemeth & Kwan, 1987); they search the stimulus array more carefully and they detect solutions that otherwise would have gone undetected. (Nemeth & Wachtler, 1983; see generally Nemeth, 1995; 2002, in press). Such

thought processes have been found to result in better judgments and better decisions (Martin & Noyes, 1996; Nemeth & Staw, 1989).

In more naturalistic settings, for example, there is evidence that groups with a dissenter have been found to make better decisions (Van Dyne & Saavedra, 1996). The U.S. Supreme Court has been found to write more cognitively complex arguments when exposed to a minority opinion (Gruenfeld, 1995). Organizations fare better when dissent is valued and expressed (De Dreu, Harinck, & Van Vianen, 1999; Nemeth, 1997). Furthermore, at a societal level, dissent and the airing of conflicting views have long been recognized as a fundamental strength of democracies (Mill, 1859; Nemeth, 1985).

There is also a direct link between minority dissent and creativity. Since creative thought is marked by divergent thought (Guilford, 1950; Nemeth & Nemeth, 2001), the stimulation of divergent thinking by minority dissent suggests a vehicle for creativity. However, there is also more direct evidence. Nemeth and Kwan (1985) found more originality of ideas after exposure to minority dissent, a finding corroborated by De Dreu and DeVries (1993). A more recent study shows that people exposed to minority dissent generated more creative solutions to a workplace problem subsequent to the discussion (Nemeth, Brown, & Rogers, 2001). There is also considerable research tying creativity to ethnic marginality, bilingualism and exposure to ideological or behavioral dissent (Campbell, 1960; Simonton, 1994; 2000).

Harmony, Conflict and Brainstorming

As we have seen, the role of conflict in idea generation has “conflicting” viewpoints. Many researchers emphasize the necessity of reducing conflict especially when it comes to evaluation or criticism. Evaluation apprehension has long been viewed as inhibiting creative thought and expression (Osborn,1957; Paulus & Dzindolet, 1993; Paulus et al., 1999). Other

researchers emphasize the role of conflict for stimulating thought and creative solutions (Nemeth & Nemeth-Brown, 2002). Our approach, as theorized elsewhere (Jehn, 1995), is that the conflict needs to be at the level of ideas, not personalities. However, we hypothesize that it is not necessary to remove evaluation or even criticism. In fact, we argue that the permission and even the encouragement of debate and controversy may be superior to an emphasis on harmony, which is often at the expense of authentic differences. The efficacy of such an instructional focus would be in direct contrast to the mainstream literature that emphasizes harmony and cohesion--and, especially, the avoidance of criticism.

What we hypothesize is that the freedom or permission to critique, even criticize, can enhance the generation of creative ideas. It could do this at two levels. One is at the level of permitting discourse that would otherwise be monitored. A second is at the level of stimulating additional thought via the expression of competing views. If what brainstorming attempts to achieve is quantity of ideas without regard for their quality (Osborn, 1957), the freedom to express thoughts without worrying whether they constitute a “criticism” of another’s ideas may be well suited to idea generation. Given that criticism is often seen as undesirable and even impolite—and normal brainstorming instructions emphasize precisely that—we hypothesize that framing criticism in terms of its potential for group creativity would both liberate individuals to be relatively free of evaluation apprehension and stimulate them to express ideas more freely. Further, given the prior work on dissent and creativity, we hypothesize that such an atmosphere might not only stimulate ideas at the group level but may stimulate creativity subsequent to the interaction.

The latter point deserves attention. Research on the brainstorming technique has emphasized the fact that groups may be sub-optimal to individuals working ideas alone because

of production blocking" (Diehl & Stroebe, 1987). People can't talk at the same time and, as such, some ideas may not be expressed. We suggest that these ideas can and should be captured and, moreover, there may be ideas stimulated by the discussion that occur subsequent to the interaction. Such an hypothesis is consistent with research showing that ideas presented in the group can prime subsequent ideas (Dugosh, Paulus, Roland, & Yang, 2000). It is also consistent with the literature on minority influence that repeatedly finds attitude change *after* the discussion (Moscovici, 1980; Mugny, 1982) or creative solutions *subsequent* to exposure to consistent minority views (Nemeth, et al., 2001).

In the present study, we propose testing the potential value of permitting criticism and dissent rather than one emphasizing harmony and a lack of criticism. Given that brainstorming instructions are very clear and admonish group members NOT to criticize each others' ideas, we will substitute that instruction with one encouraging debate and criticism. A Control condition will offer no instructions other than the task description. Further, we will test whether such instructions, compared to the control, achieve greater idea production in the group setting and whether they achieve more ideas subsequent to the discussion. For post-discussion ideas, we will explore those ideas considered but "Not Expressed" and those new ideas generated "Now" after discussion. Finally, we test these hypotheses in two very different cultures: the United States and France, the primary interest being whether the direction of findings is similar in the two countries. Our specific hypotheses are:

Hypothesis 1: Subjects given "Debate" instructions, emphasizing the value of debate and controversy will generate more ideas than those given the typical "Brainstorming" instructions or those given no instructions other than the task description (Minimal).

Hypothesis 2: Subjects in all conditions will generate ideas subsequent to the discussion, both those considered but "Not Expressed" in the group setting and those generated "Now," after discussion.

Hypothesis 3: Post-discussion ideas will be greater in the Debate condition than the Brainstorming condition than the Minimal condition.

Hypothesis 4: Total production of ideas (Group and Post Discussion) will be greater in Debate than Brainstorming than Minimal instructions.

Hypothesis 5: No country differences are expected but it could be argued that the French, with their penchant for political debate, might generate more ideas in the Debate condition than their American counterparts.

Study 1 (U.S.)

Participants and Procedure

In the U.S. sample, subjects were 265 females who volunteered for participation through the subject pool at the Department of Psychology, University of California, Berkeley. Subjects were run in groups of 5 same-sex individuals. One group was removed due to a lack of understanding of the instructions, resulting in 260 subjects comprising 52 groups of 5 persons.

Upon entry, subjects were seated at a table and asked not to speak until the study began. All groups were told that we are interested in the topic of how to reduce traffic congestion in the San Francisco Bay Area. They were given 20 minutes to come up with as many good solutions as they could to the problem.

In each session, one subject was randomly assigned to be the recorder for the group. Instead of participating in the discussion, the recorder was instructed to write down every single

idea the group generated. The brainstorming topic was repeated and they were reminded that they had twenty minutes to complete the task.

In all conditions, they were told to "come up with as many good solutions as you can to the problem."

In the **minimal** condition, the groups were not given any additional instructions.

In the **brainstorming** condition, they were given the traditional elements of brainstorming (Diehl & Stroebe, 1987). They were told: "Most research and advice suggest that the best way to come up with good solutions is to come up with many solutions. Freewheeling is welcome; don't be afraid to say anything that comes to mind. **However, in addition, most studies suggest that you should rule out criticism. You should NOT criticize anyone else's ideas**."

In the **debate** condition, they were not given a rule against criticism. Rather, they were encouraged to do just that. They were told, "Most research and advice suggest that the best way to come up with good solutions is to come up with many solutions. Freewheeling is welcome; don't be afraid to say anything that comes to mind. **However, in addition, most studies suggest that you SHOULD debate and even criticize each other's ideas.**"

After twenty minutes elapsed, the experimenter returned to the room and collected the group solution sheet. Each person then individually completed two items. For the first, they were asked to write down any solutions that they thought of during the group discussion but did not express. For the second, they were asked to write down any solutions they might have NOW after the group discussion is over.

Following the completion of the survey, they were permitted to ask questions and were then debriefed and dismissed.

Results (Study 1)

We report data on three conditions in which people were asked to generate as many good ideas as possible. In the "Minimal" condition, there were no additional instructions. In the Brainstorming condition, the usual "4" rules were given including an admonition NOT to criticize their own or others' ideas. In the Debate condition, the admonition NOT to criticize was replaced with encouragement TO debate and criticize.

We started with the specific hypothesis that both the Debate and the Brainstorming conditions would result in the generation of more ideas than would the Minimal condition. Additionally, we predicted that the Debate condition would result in even more ideas generated than the Brainstorming condition.

For the dependent measure of the number of ideas generated in the groups, the specific contrast between Debate and Minimal conditions was highly significant, $F(1, 33) = 5.23$, $p < .03$. The Debate condition generated significantly more ideas than did those in the Minimal Condition. The Brainstorming condition did not differ significantly from the Minimal condition, $F(1, 33) = 2.28$, ns, nor did it differ significantly from the Debate condition, $F(1, 32) = 0.28$, ns.

--Insert Table 1 about here--

Analyses for post-discussion ideas show a similar pattern. The number of ideas that subjects reported as having been considered during discussion but "not expressed" showed a significant difference between Debate and Minimal conditions, $F(1, 138) = 5.89$, $p < .02$, while Brainstorming did not differ significantly from the Minimal condition, $F(1, 138) = 0.94$, ns, or the Debate condition, $F(1, 134) = 2.34$, ns. Again, the Debate condition had more ideas considered but "not expressed" than did the Minimal condition. For new ideas, generated "now" after discussion, results show that subjects in the Debate condition generated significantly more

ideas than did those in the Minimal condition, $F(1,138) = 12.77$, $p < .01$. Subjects in the Brainstorming condition also generated significantly more "new" ideas than did those in the Minimal condition, $F(1,138) = 11.75$, $p < .01$, but did not differ significantly from those in the Debate condition, $F(1,134) = 0.19$, ns. Combining the two "post-discussion" types of ideas, analyses revealed that both the Brainstorming and the Debate conditions had more post-discussion ideas than did the Minimal condition, $F(1,138) = 10.62$, $p < .01$; $F(l, 138) = 16.01$, $p < .01$, respectively.

--Insert Table 2 about here--

Total production was calculated as l/4 of the group ideas plus that individual's ideas "Not expressed" and those developed "Now." Results indicated a significant difference between Minimal and Brainstorming conditions, $F(1, 138) = 16.81$, $p < .01$, a significant difference between Minimal and Debate conditions, $F(1, 138) = 33.32$, $p < .01$ and a marginal difference between Brainstorming and Debate conditions, $F(1, 134) = 2.87$, $p < .09$. Debate led to more "total production" than did Brainstorming than did Minimal instructions.

Study 2 (France)

The identical study was conducted in Paris, France with exact translation of the instructions.

Participants and Procedure

In the French sample, subjects were 30 male and 175 female undergraduates who volunteered for participation through Psychology classes at University of Paris 10, Nanterre. Subjects were run in groups of 5 same-sex individuals. Two all-female groups were removed for not following instructions, resulting in 195 subjects comprising 39 groups of 5 persons.

Upon entry, subjects were seated at a table and asked not to speak until the study began. All groups were told that we are interested in the topic of how to reduce traffic congestion in the Paris area. They were instructed to come up with as many good solutions as they could to the problem in twenty minutes.

Instructions for each condition (Minimal, Brainstorming and Debate) were identical to those described in Study 1. In all conditions, they were told to "come up with as many good solutions as you can to the problem" translated, "Nous voulons que vous donniez autant de bonnes solutions que vous pouvez."In the **minimal** condition, the groups were not given any additional instructions.

In the **brainstorming** condition, they were given the traditional elements of brainstorming (Diehl & Stroebe, 1987) including the advice not to criticize. They were told, "De nombreuses recherches et points de vue suggèrent que le meilleur moyen de parvenir à de bonnes solutions c'est de proposer beaucoup de solutions. L'imagination est la bienvenue; n'hésitez donc pas à dire tout ce qui vous vient à l'esprit. Cependant, pour résumer, (en appuyant) un nombre important d'informations en ce domaine indiquent qu'il est souhaitable d'eviter toute critique. Vous ne devez donc pas critiquer les idées des autres."

In the **debate** condition, the instructions were the same as in brainstorming except for the advice not to criticize. Rather, they were specifically advised to engage in debate and even criticism. They were told: "De nombreruses recherches et points de vue suggèrent que le meilleur moyen de parvenir à de bonnes solutions c'est de proposer beaucoup de solutions. L'imagination est la bienvenue; n'hésitez donc pas à dire tout ce qui vous vient à l'esprit. Cependant, pour résumer, (avec insistance) de nombreuses informations en ce domaine indiquent qu'il est souhaitable d'entrer dans un débat and même de critiquer les idées des autres."

Results (Study 2)

For the dependent measure of the number of ideas generated in the group, results show a significant difference between the Debate and Minimal conditions with subjects in the Debate condition generating more ideas than those in the Minimal condition, $F(1, 26) = 5.76$, $p < .02$. The Brainstorming condition did not differ significantly from either the Minimal condition, $F(1, 26) = 1.85$, ns, or the Debate conditions, $F(1, 26) = 1.85$, ns, on group idea generation. These findings are identical to those found in Study 1.

--Insert Table 3 about here--

For post discussion ideas, there were no significant differences between the Debate condition and either the Minimal condition, $F(1, 110) = 2.27$, ns, or the Brainstorming condition, $F(1, 110) = 0.49$, ns, on ideas considered but "not expressed." However, the minimal condition showed more ideas "not expressed" than did the brainstorming condition, $F(1, 110) = 5.13$, $p <. 03$. There were no significant differences between any of the conditions on ideas considered "now." Combining the two types of "post-discussion ideas" revealed no significant differences among any of the 3 conditions.

--Insert Table 4 about here--

For total production (l/4 of the group ideas plus that person's own ideas "not expressed" and ideas "now"), planned contrasts revealed a significant difference between Debate and Minimal conditions with the Debate condition having more "total production" than the minimal condition. $F(1, 110) = 3.84$, $p < .05$. Brainstorming did not differ significantly from either the Minimal or the Debate conditions. No other differences were significant.

Combined Results

As seen in the previous summary of findings for the United States and France separately, the data are very similar. In both countries, the Debate instructions led to significantly more idea generation in the groups than did Minimal instructions, both in the U.S. and in France. The traditional Brainstorming instructions, while higher, were not significantly higher than Minimal instructions in either the U.S. or France. For post-discussion ideas, we again found the Debate instructions higher in ideas than the Minimal instructions for the U.S. data; findings were non significant for the French data.

For "total production," the data are clearer in the U.S. than in the French sample. In the U.S. sample, there were significantly more ideas in the Debate condition than in the Minimal condition for "total" ideas. Brainstorming instructions produced significantly more "total" ideas than the Minimal condition; however, it produced significantly **fewer** "total" ideas than the Debate condition. For the French sample, the Debate condition was superior to the Minimal condition for "total production." No other findings were significant though the pattern paralleled the U.S. sample with Debate being higher than Brainstorming being higher than Minimal.

This same pattern resulted when we calculated a 2 x 3 factorial Analysis of Variance for country and condition (US/FR; Minimal/Brainstorm/Debate). For number of ideas generated in the group, the Debate condition generated more ideas than did the Minimal condition, $F(1, 59) = 10.81$, $p < .01$. Brainstorming was marginally better than the Minimal condition, $F(1, 59) = 3.82$, $p < .06$, and did not differ significantly from the Debate condition, $F(1, 58) = 1.56$, ns. Post-discussion ideas did not reveal significant differences between conditions. For total productivity, both Brainstorming and Debate conditions had significantly more ideas than the Minimal condition ($F(1, 248) = 12.27$, $p < .01$; $F(1, 248) = 29.79$, $p < .01$, respectively). Further,

Debate had significantly more "total production" than did Brainstorming, $F(1, 244) = 4.27$, $p < .04$. For the 3 dependent measures, there was only one significant effect for country. Subjects in the U.S. generated more ideas in the group than did subjects in France ($F(1, 88) = 11.45$, $p < .05$). There were no differences by country for ideas "not expressed" or "now."

General Discussion

Given that replications, even in the same laboratory, are often difficult to achieve, the similarity of findings in two quite distinct cultures argues for the strength of the results. These findings are best demonstrated by the Analysis of Variance including data from both countries. There was only one significant result for country. Subjects in the U.S. sample generated significantly more ideas, both in the groups and in total production than did the French sample. The main significant differences were between the experimental conditions. One set of findings shows that Debate instructions (encouraging debate and controversy—even criticism) stimulated significantly more ideas than did "Minimal" instructions regarding the task. This was true for group ideas as well as "total production." Further, this superiority of Debate over Minimal instructions was generally found for each country separately. In the French sample, Debate was superior to Minimal instructions for group ideas and for "total production." In the U.S. sample, all of the above dependent measures were significant; Debate instructions stimulated significantly more ideas than did Minimal instructions in the groups, on ideas "not expressed," on "new" ideas and on total production.

A second set of findings deals with a comparison between the traditional Brainstorming instructions and the Minimal instructions. Here the findings are more complex. For the combined sample, Brainstorming was marginally better than Minimal instructions for ideas generated in the group and significantly better than Minimal instructions only for the dependent measure of total

production. For each country separately, this same general pattern holds. While there is some evidence for the superiority of Brainstorming over Minimal instructions in the U.S. sample, at least with regard to post-discussion ideas and total production, there were no significant differences for ideas in the groups. Further, there is almost no evidence for its efficacy in the French sample.

The third set of findings deals with Debate versus traditional Brainstorming instructions. As described previously, findings point to the superiority of Debate, both in the direction of the means and in the fact that the former leads to significantly more ideas during and "post" discussion than Minimal instructions while traditional Brainstorming tends to be marginally or non significantly different from the Minimal instructions. The more direct comparisons between Brainstorming and Debate show that, for the combined U.S./French samples, the Debate condition generated significantly more ideas--more "total production"-- than did the Brainstorming condition. For the U.S. sample, the Debate condition generated marginally more ideas in the group than did the Brainstorming condition.

The superiority of Debate over Minimal instructions is both interesting and surprising in light of the fact that the instruction "Do not criticize" is often cited as *the* important instruction in brainstorming. The aim of not criticizing is to reduce or eliminate evaluation apprehension, often viewed as a major impediment to idea generation. Thus, even if the instruction is not completely successful in its attempt to eliminate criticism, most researchers of group creativity would argue that the premise is still correct. One should refrain from criticism. From this perspective, not only should Debate instructions not stimulate more ideas than Minimal instructions, it should do the reverse, namely, it should be detrimental to idea generation, resulting in fewer ideas than those in the Minimal condition. The results are the opposite. We will return to this point.

Perhaps even more surprising is the evidence suggesting that Debate is even more conducive to idea generation than traditional Brainstorming instructions. It is significantly higher than the Minimal condition on most dependent measures while Brainstorming is marginal or non significant. More directly, Debate is significantly higher in total ideas (total production) than is Brainstorming. Such findings make us question one of the basic premises of the brainstorming technique and considerable research in group creativity. In most research on brainstorming, the literature is concerned with "if, when and why" an instruction "not to criticize" improves idea generation since there is an unquestioned assumption that the admonition "not to criticize" is an appropriate goal, one which should reduce, if not eliminate, evaluation apprehension. There has been little work which has questioned the basic premises, especially with regard to the elimination of evaluation apprehension and the efficacy of instructions admonishing individuals "not to criticize."

The current studies, especially in light of the fact that two distinct cultures are showing the same pattern of findings, raise the question as to whether evaluation apprehension is of major import in reducing idea generation and even if so, if instructions against criticism actually reduce it. However, the issue is larger than this. Why is Debate—an actual encouragement of criticism even more effective in stimulating idea generation in groups, post -discussion and in total production?

Several possibilities suggest themselves. If we assume, for example, that the premise that evaluation apprehension should be reduced is correct, we might entertain the possibility that Debate—the encouragement of debate and criticism-- actually lowers evaluation apprehension. Perhaps the permission and even the encouragement to actively engage in debate spurs a freedom to "think the unthinkable" (Fulbright, 1964), to play with ideas. Thus, ironically, promoting the

value of debate and criticism may in fact lead to less concern about being evaluated negatively. If nothing else, permission removes the personal dimension and thus the possible affront. From this perspective, evaluation apprehension may play a part in reducing creative idea generation but the admonition "not to criticize" may not achieve its goal of reducing such apprehension, a conclusion supported by previous work. Rather the framing of criticism and its interpretation as a contribution to the group may in fact reduce such evaluation apprehension.

A second related possibility is that an instruction to do something that is normally forbidden—at least considered impolite—may be liberating in and of itself. Breaking rules, doing the "forbidden," stating one's mind directly may be very liberating and even stimulating.

A third possibility, one which we favor, is that there is value in competing ideas, debate, and intellectual conflict for creativity. Previous research on minority dissent suggests that such confrontation and debate stimulates more thought and, importantly, thought that is divergent and creative (Nemeth, 2002, in press). Further, there is evidence that such practices aid innovation in the workplace (Nemeth, 1997; De Dreu & West, 2001).

The ways in which debate and conflict can be harnessed to foster creativity is not well understood. By debate, we do not mean argumentation for the sake of argument. Nor do we mean techniques by which debate is role played, as with devil's advocate. In fact, we have evidence that such role-playing techniques do not stimulate creative thought and solutions as does authentic dissent (Nemeth, Connell, Rogers, & Brown, 2001; Nemeth, Brown, & Rogers, 2001). What we are arguing is that authentic differences stimulate thought that encourages the consideration of more information, more strategies and creative solutions. Thus, where differences exist, they should be expressed, confronted and explored.

There are implications of this line of work for the broader literatures of Social Psychology and Organizational Behavior, that have often emphasized harmony, avoiding conflict and strengthening cohesion. A survey of most textbooks in Social Psychology shows the links between liking and being liked, cohesion, persuasive tactics, attitude change, productivity and morale. Winning friends is often seen as linked to "influencing people" (Carnegie, 1937).

In Organizational Behavior, the fields of organizational culture, person-organization fit and organizational demography often assume that homogeneity of thought enhances individual, group and organizational performance. The goal is homogeneity of views and behavior, enforced through mechanisms of social control, or "fit" which results in more satisfaction, commitment and retention (Chatman, 1991; Schein, 1992; O'Reilly & Chatman, 1996).

There have been dissenting voices, however. The problems associated with cohesion, harmony and strong leadership have been recognized by researchers of defective group processes such as groupthink (Janis, 1982) or of information sharing that is biased towards facts that are held in common (Stasser & Titus, 1985). Both types of work show the problems with not availing oneself of information held by a minority member or by processes that limit the debate and confrontation of differing views.

More direct evidence has been provided by work on minority influence, especially that showing that minority views stimulate divergent information search, strategies, and thought. People detect new correct solutions and think more creatively (see generally Nemeth, 1995). The importance here is that minority views may not "persuade" others to their position; however, they stimulate divergent thinking and, in general, raise the level of decision making and productivity (Nemeth, 2002, in press).

From this perspective, dissent has value, even if it is wrong. Competing views serve decision making, innovation in the workplace (Nemeth, 1997) and, as argued by John Stuart Mill (1859), the detection of truths. In the context of the present study, the encouragement of such debate—and even criticism if warranted—appears to encourage the expression of more creative ideas.

References

Amabile, T.M. (1983). The social psychology of creativity. New York: Springer-Verlag.

Baron, F. X. (1969). *Creative person and creative process*. New York: Holt, Rinehart & Winston.

Camacho, L. M., & Paulus, P. B (1995). The role of social anxiousness in group brainstorming. *Journal of Personality and Social Psychology*, *68*, 1071-1080.

Campbell, D. T (1960). Blind variation and selective retention in creative thought as in other knowledge processes. *Psychological Review*, *67*, 380-400.

Carnegie, D. (1937). *How to win friends and influence people*. New York: Simon and Schuster.

Chatman, J. A. (1991). Matching people and organizations: Selection and socialization in public accounting firms. *Administrative Science Quarterly*, *36*: 459-484.

De Dreu, C. K. W., & DeVries, N. K. (1993). Numerical support, information processing and attitude change. *European Journal of Social Psychology*, *23*, 647-662.

De Dreu, C. K. W., Harinck, F., & Van Vianen, A. E. M. (1999). Conflict and performance in groups and organizations. In C.L. Cooper, & I.T. Robertson (Eds.), *International Review of Industrial and Organizational Psychology* (vol. 11., pp. 367-405). Chichester, UK: Wiley.

De Dreu, C. K. W., & West, M. A. (2001). Minority dissent and team innovation: The importance of participation in decision making. *Journal of Applied Psychology*, *86*, 1191-1201.

Delbecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1974). *Group techniques for program planning : a guide to nominal group and Delphi processes*. Glenview, IL: Scott Foresman.

Diehl, M., & Stroebe, W. (1987). Productivity loss in brainstorming groups: toward the solution of a riddle. *Journal of Personality and Social Psychology, 53,* 497-509.

Dugosh, K. L., Paulus, P. B., Roland, E. J., & Yang, H-C. (2000). Cognitive stimulation in brainstorming. *Journal of Personality and Social Psychology*, *79*(5), 722-735.

Dunnette, D., Campbell, J., Jaastad, K. (1963). The effect of group participation on brainstorming effectiveness for 2 industrial samples. *Journal of Applied Psychology, 47* (1), 30-37.

Fulbright, J.W. (1964, March 27). Speech to the United States Senate.

Gruenfeld, D. (1995). Status, ideology and integrative complexity on the U.S. Supreme Court: Rethinking the politics of political decision making. *Journal of Personality and Social Psychology*, *68,* 5-20.

Guilford, J. P. (1950). Creativity. *American Psychologist, 5*, 444-454.

Hargadon, A., & Sutton, R.I. (1997). Technology brokering and innovation in a product development firm. *Administrative Science Quarterly, 42*, 716-749.

Janis, I. L. (1982). *Groupthink: Psychological studies of policy decisions and fiascoes* (2nd ed.). Boston: Houghton Mifflin.

Jehn, K.A. (1995). A multi-method examination of the benefits and detriments of inter -group conflict. *Administrative Science Quarterly, 40*(2), 256-282.

Jehn, K. A., & Mannix, E. A. (2001). The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance, *ACAD MANAGE J, 44* (2). 238-251.

Karau, S. J., & Williams, K. D. (1993). Social loafing: A meta-analytic review and theoretical integration. *Journal of Personality and Social Psychology, 65*, 681-706.

Kasof, J. (1995). Explaining creativity: The attributional perspective. *Creativity Research Journal, 8*, 311-366.

Larey, T. S., & Paulus, P. B. (1999). Group preference and convergent tendencies in small groups: A content analysis of brainstorming performance. *Creativity Research Journal, 12*, 175-184.

Martin, R., & Noyes, C. (1996). Minority influence and argument generation. In C. J. Nemeth (Ed.), *British Journal of Social Psychology: Special Issue on Minority Influence, 35*, 91-103.

McGrath, J. E. (1984). *Groups: Interaction and performance*. New York: Prentice Hall.

Mill, J. S. (l859, 1979). *On liberty*. New York: Penguin

Milliken, F. J., & Martins, L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of Management Review, 21*, 402-433.

Moscovici, S. (1980). Towards a theory of conversion behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology, vol. 13* (pp. 209-239). San Diego, CA: Academic Press.

Moscovici, S., & Faucheux, C. (1972). Social influence, conformity bias and the study of active minorities. In L. Berkowitz (Ed.*), Advances in experimental social psychology, vol. 6* (pp. 149-202). New York: Academic Press.

Mugny, G. (1982). *The power of minorities*. London: Academic Press.

Nemeth, C. (1976, August*). A comparison between conformity and minority influence*. Paper presented at the International Congress of Psychology (joint meeting of the Society of

Experimental Social Psychology and the European Association of Social Psychology), Paris, France.

Nemeth, C. (1985). Dissent, group process and creativity. In E. Lawler (Ed.), *Advances in group processes theory and research* (pp. 57-75). Greenwich, CT: JAI Press.

Nemeth, C. (1995). Dissent as driving cognition, attitudes and judgments. *Social Cognition, 13*, 273-291.

Nemeth, C. (1997). Managing innovation: When less is more. *California Management Review, 40*, 59-74.

Nemeth, C., Brown, K., & Rogers, J. (2001). Devil's advocate vs. authentic dissent: Stimulating quantity and quality. *European Journal of Social Psychology, 31*, 707-720.

Nemeth, C., & Kwan, J. (1985). Originality of word associations as a function of majority vs. minority influence processes. *Social Psychology Quarterly, 48*, 277-282.

Nemeth, C., & Nemeth-Brown, B. (2002, in press). Better than individuals? The potential benefits of dissent and diversity for group creativity. In P. Paulus & B. Nijstad (Eds.), *Group creativity*. Oxford: Oxford University Press.

Nemeth, C., & Rogers, J. (1996). Dissent and the search for information. *British Journal of Social Psychology, 35*, 67-76.

Nemeth, C. J. (1986). The differential contributions of majority and minority influence. *Psychological Review, 93*, 23-32. Reprinted in M. Hogg (Ed.) (2002). *Sage benchmarks in psychology: Social psychology.*

Nemeth, C. J. (2002, in press). Minority dissent and its “hidden” benefits. *New Review of Social Psychology*.

Nemeth, C. J., Connell, J., Rogers, J., & Brown, K. (2001). Improving decision making by means of dissent. *Journal of Applied Social Psychology*, *31*, 48-58.

Nemeth, C. J., & Kwan, J. (1987). Minority influence, divergent thinking and the detection of correct solutions. *Journal of Applied Social Psychology*, *17*, 786-797.

Nemeth, C. J., & Nemeth, L. (2001). Understanding the creative process: Management of the knowledge worker. In J. Nonaka & D. J. Teece (Eds.), *Managing industrial knowledge* (pp. 91-104). London: Sage Publications.

Nemeth, C. J., & Staw, B. M. (1989). The tradeoffs of social control and innovation within groups and organizations. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 22, pp. 175-210). New York: Academic Press.

Nemeth, C. J., & Wachtler, J. (1983). Creative problem solving as a result of majority vs. minority influence. *European Journal of Social Psychology*, *13*, 45-55.

O'Reilly, C. A., & Chatman, J. A. (1996). Culture as social control: Corporations, culture and commitment. In B. Staw & L. Cummings (Eds.), *Research in Organizational Behavior*, Vol. 18. Greenwich, CT: JAI Press.

Osborn, A.F. (1957). *Applied imagination*. New York: Scribner.

Parnes, S. J., & Meadow, A. (1959). Effect of brainstorming instructions on creative problem solving by trained and untrained subjects. *Journal of Social Behavior and Personality*, *11*, 633-646.

Paulus, P. B. (2000). Groups, teams and creativity: The creative potential of idea generating groups. *Applied Psychology: An International Review*, *49*, 237-262.

Paulus, P. B., Brown, V., & Ortega, A. H. (1999). Group creativity. In R. E. Purser & A. Montuori (Eds.), *Social creativity: Vol. 2* (pp. 151-176). Cresskill, NJ: Hampton.

Paulus, P.B., & Dzindolet, M. T. (1993). Social influence processes in group brainstorming. *Journal of Personality and Social Psychology, 64*, 575-586.

Paulus, P. B., Larey, T. S., & Dzindolet, M. T. (2000). Creativity in groups and teams. In M. Turner (Ed.), *Groups at work: Advances in theory and performance* (pp. 319-338). Hillsdale, NJ: Erlbaum.

Postmes, T., Spears, R., & Cihangir, S. (2001). Quality of decision making and group norms. *Journal of Personality & Social Psychology, 80*(6), 918-930.

Schein, E. H. (1992). *Organizational culture and leadership*. San Francisco: Jossey-Bass Publishers.

Simonton, D. K. (1994). Greatness: *Who makes history and why*. New York: Guilford Press.

Simonton, D. K. (2000). Creativity: Cognitive, personal, developmental and social aspects. *American Psychologist, 5*, 151-158.

Stasser, G., & Titus, W. (1985). Pooling of unshared information in group decision making: Biased information sampling during group discussion. Journal of Personality and Social Psychology, 48, 147-78.

Sternberg, R. J. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity*. New York: Free Press.

Taylor, D. W., Berry, P. C., & Block, C. H. (1958). Does group participation when using brainstorming facilitate or inhibit creative thinking. *Administration Science Quarterly, 3*, 29-47.

Van Dyne, L., & Saavedra, R. (1996). A naturalistic minority influence experiment: Effects on divergent thinking, conflict, and originality in work-groups. *British Journal of Social Psychology*, *35*, 151-168.

West, M. A., & Farr, J. L. (1990). *Innovation and creativity at work: Psychological and organizational strategies*. Chichester, England: Wiley.

Williams, K. Y., & O'Reilly, C. A., III (1998). Demography and diversity in organizations: A review of 40 years of research. *Research in Organizational Behavior*, *20*, 77-140.

Wood, W., Lundgren, S., Ouellette, J. A., Busceme, S., & Blackstone, T. (1994). Minority Influence: A meta-analytic review of social influence processes. *Psychological Bulletin*, *115*, 323-45.

Table 1

(Study 1: U.S. Sample)

Mean Number of Ideas Generated by Groups by Condition

Group	Minimal	Brainstorming	Debate
	19.78_{a}	23.65_{ab}	24.82_{b}

*Subscripts in common indicate that the means are not significantly different at $p < .05$.

Table 2

(Study 1: U.S. Sample}

Mean Number of Ideas Generated by Groups by Condition

Group	Minimal	Brainstorming	Debate
Post discussion ideas	0.92_a	1.68_b	2.06_b
Total production	5.86_a	7.59_b	8.26_b

*Subscripts in common indicate that the means are not significantly different at $p<.05$.

Note: Marginal significance ($p<.10$) for Debate vs. Brainstorming on total production per individual.

Table 3

(Study 2: French Sample)

Mean Number of Ideas Generated by Groups by Condition

Group	Minimal	Brainstorming	Debate
	15.50_{a}	18.29_{ab}	21.00_{ab}

*Subscripts in common indicate that the means are not significantly different at $p < .05$.

Table 4

(Study 2: French Sample)

Mean Number of Ideas Generated by Groups by Condition

Group	Minimal	Brainstorming	Debate
Post Discussion Ideas	1.75_{a}	1.38_{a}	1.29_{a}
Total production	5.70_{a}	5.96_{ab}	6.45_{b}

*Subscripts in common indicate that the means are not significantly different at $p<.05$.

Table 5

Combined U.S. and French Samples

Group	Minimal	Brainstorming	Debate
Group Ideas	17.91_{a}	21.23_{ab}	23.1_{b}
Post Discussion Ideas	1.28_{a}	1.54_{a}	1.71_{a}
Total Production	5.79_{a}	6.85_{b}	7.44_{c}

*Subscripts in common indicate that the means are not significantly different at the .05 level.

Note: Marginal significance ($p<.10$) for Brainstorming vs. Minimal on Group Ideas and Total Production per group.