

Chapter 1.10

Patterns in Electronic Brainstorming

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ABSTRACT

Research has shown that some groups using electronic brainstorming generate more unique ideas than groups using nominal group brainstorming, while others do not. This study examined two factors through which group size may affect brainstorming performance: synergy and social loafing. Groups brainstormed using three techniques to manipulate synergy and two group sizes to manipulate social loafing. We found no social

loafing effects. We found a time effect: nominal brainstorming groups that received no synergy from the ideas of others produced more ideas than electronic groups in the first time period and fewer ideas in the last time period. We conclude that synergy from the ideas of others is only important when groups brainstorm for longer time period. We also conclude that electronic brainstorming groups should be given at least 30 minutes to work on tasks, or else they will be unlikely to develop synergy.

INTRODUCTION

The idea of using brainstorming has been around for almost 50 years (Osborn, 1957). Yet, traditional group brainstorming, where group members verbally share their ideas, has not been found to be a very productive idea generation technique when compared to other brainstorming techniques (Mullen, Johnson, & Salas, 1991). A controversy has surfaced recently regarding two other forms of brainstorming—nominal group brainstorming and electronic brainstorming¹. Both of these techniques have been found to be more productive than traditional verbal brainstorming, but the question remains as to which one is more productive—nominal or electronic brainstorming. Some studies in the early 1990s found that electronic groups generated more ideas than nominal groups (Dennis & Valacich, 1993; Valacich, Dennis, & Connolly, 1994), but a recent study has cast doubt on these findings and has claimed that the productivity of electronic brainstorming may be an illusion (Pinsonneault et al., 1999a). This is the subject of debate, with some researchers arguing that group size plays an important role: large electronic groups outperform large nominal groups, but small nominal groups outperform small electronic groups (Dennis & Valacich, 1999; Pinsonneault et al., 1999b).

The purpose of this paper is to investigate two underlying theoretical factors that may influence the relative productivity of small and large nominal and electronic brainstorming groups: synergy and social loafing. Large electronic brainstorming groups may experience more synergy (and thus produce more ideas) than small groups on a per-person basis, because they have more potential sources of synergy. However, these same large brainstorming groups also may experience more social loafing (and thus produce fewer ideas) than small groups on a per-person basis, because members are more likely to perceive their contributions as less needed. In this paper, we attempt

to separate these competing factors in order to better understand how group size may affect brainstorming performance.

PREVIOUS RESEARCH

Group creativity and brainstorming have long been the subject of academic research. The general conclusion of this body of research is that people generate fewer ideas when they work together in verbally interacting groups than when they work in nominal groups (i.e., when they work separately and later pool their ideas) (Mullen et al., 1991; Paulus, Larey, & Ortega, 1995). Reasons for this are due mainly to production blocking and evaluation apprehension that prevail in verbal communication but do not exist in nominal groups. Production blocking refers to the need to take turns speaking in verbal communication (Diehl & Stroebe, 1987). When participants are prevented from contributing an idea when they first think of it, they may forget it or suppress it, because later, the idea seems less relevant or original. If they try to retain the idea, they must focus on remembering it, which prevents them from generating new ideas or attending to the ideas of others (Diehl & Stroebe, 1991). Evaluation apprehension may cause participants in verbal brainstorming to withhold ideas, because they fear a negative reaction from others (Diehl & Stroebe, 1987; Lamm & Trommsdorff, 1973).

Over the last decade, a new form of brainstorming—electronic brainstorming—has emerged. With electronic brainstorming, participants interact via computers. They type their ideas into their computers simultaneously. These ideas are shared via the computers by allowing each member to read on their computer screen the ideas others in the group have generated. Electronic brainstorming does not improve the productivity of small groups but may improve the productivity of large groups (Dennis & Valacich, 1999).

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