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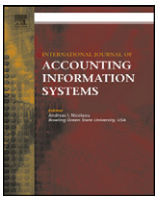

# Why computer-mediated communication improves the effectiveness of fraud brainstorming ☆

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ABSTRACT

Current auditing standards require auditors to conduct a fraud brainstorming session aimed at considering ways in which the audit client's financial statements might be fraudulently misstated. Lynch et al. (2009) document that computer-mediated fraud brainstorming is significantly more effective than face-to-face brainstorming for generating relevant fraud risks. In this study, we code and analyze process-level data from the Lynch et al. (2009) study to understand the factors contributing to the greater effectiveness of electronic fraud brainstorming. Specifically, we conduct mediation analysis to discern the degree to which equality of participation and two measures of task focus contribute to greater fraud brainstorming effectiveness when using a computer-mediated communication system compared to traditional face-to-face brainstorming. We also examine participants' perceptions of ease of system use, satisfaction with the process, and satisfaction with the outcome. Overall, the results indicate that the primary reason for the greater effectiveness of electronic fraud brainstorming is the greater degree of task focus as revealed through the length of comments made when using computer-mediated fraud brainstorming. In an absolute sense, participants using electronic brainstorming felt that their brainstorming mode was easy to use and they were satisfied with the process and outcome. The primary contribution of this study is in enhancing our understanding of precisely why computer-mediated fraud brainstorming outperforms face-to-face fraud brainstorming.

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## 1. Introduction

The American Institute of Certified Public Accountants (AICPA) and the Public Company Accounting Oversight Board (PCAOB) have recognized the importance of fraud brainstorming during the planning of independent financial statement audits. Statement on Auditing Standards (SAS) No. 99, *Consideration of Fraud in a Financial Statement Audit*, contains a presumptively mandatory requirement that auditors engage in fraud brainstorming session(s) during audit planning where they interact to exchange ideas on the ways in which the audit client could engage in fraudulent financial reporting or the misappropriation of assets (AICPA 2002). SAS No. 99 does not mandate any particular mode of brainstorming and, as Brazel et al. (2010) have documented, the most common mode employed by accounting firms is face-to-face brainstorming. Hunton and Gold (2010) conduct a field experiment comparing three face-to-face brainstorming techniques and find that unstructured open discussion, the technique employed by most firms, is also the least effective. In a laboratory experiment aimed at comparing face-to-face brainstorming with computer-mediated brainstorming, Lynch et al. (2009) find that computer-mediated fraud brainstorming is significantly more effective than face-to-face fraud brainstorming. Actual patterns of participation, however, were not analyzed at the process level in the Lynch et al. (2009) investigation to help explain *why* computer-mediated fraud brainstorming outperforms face-to-face brainstorming.

In the Lynch et al. (2009) study, two factors were manipulated: communication mode and content facilitation, with the results revealing significant main effects on brainstorming effectiveness for both communication mode and content facilitation. In the current study, we transcribe and code data from the 84 participants in the Lynch et al. (2009) study engaged in unfacilitated electronic interactive, electronic nominal, and face-to-face fraud brainstorming.[3] Specifically, we compare the relative degree of equality of participation and measures of task focus between participants engaged in face-to-face and electronic brainstorming with the objective of explaining *why* computer-mediated fraud brainstorming is more effective than face-to-face brainstorming. The two main causes for performance differences between computer-mediated and face-to-face fraud brainstorming are (1) the simultaneous input of comments in the computer-mediated environment, which mitigates production blocking and could foster more equal participation (Nijstad et al., 2003a, 2003b), and (2) the decreased social presence in the computer-mediated environment, which could foster a higher degree of task focus per social presence theory and information richness theory (Short et al., 1976; Daft and Lengel, 1986). It is important to understand which of these two causes is more responsible for the superiority of electronic fraud brainstorming because if the sole cause of the superiority of electronic fraud brainstorming is more equal participation then practices such as the round-robin technique that fosters more equal participation could be employed to boost productivity in face-to-face brainstorming sessions. Alternatively, if the enhanced task focus in the electronic environment is primarily responsible for the superior performance, given that it is difficult to replicate greater task focus in a face-to-face setting the results would imply that an electronic system should be used to realize the productivity gains. Employing mediation analysis, we investigate the relationships between communication mode, various measures of process-level differences between face-to-face and electronic brainstorming, and fraud brainstorming effectiveness.

We also compare individual participants' perceptions about ease of system use and their satisfaction with the brainstorming process and outcomes, which are factors associated with the likelihood that individuals will continue using systems (Hiltz and Johnson, 1990; Wixom and Todd, 2005). If participants view an electronic fraud brainstorming system as being difficult to use, or if they are dissatisfied with the process and outcome from using the system, then the utility of such a system would be diminished despite its superior effectiveness. Given that Lynch et al. (2009) have demonstrated the superior effectiveness of electronic brainstorming systems relative to traditional face-to-face brainstorming, it is important to ensure that ease of system use and satisfaction are not impediments to the implementation of electronic fraud brainstorming systems in practice.

[3] Interactive brainstorming enables all team members to observe the comments of their entire team in real-time. Nominal brainstorming has team members brainstorm by themselves during the session, without being able to observe the comments of their entire team in real-time, and they are subsequently shown the comments of the entire team at the end of the session. While SAS No. 99 contains numerous brainstorming requirements, it does not mandate any specific type of brainstorming format. On June 23, 2010, an AICPA technical hotline representative confirmed that the electronic nominal form of brainstorming that is used in this research is permissible under SAS No. 99. It should also be noted that SAS No. 99 has been adopted by the Public Accounting Oversight Board (PCAOB) as part of its Interim Professional Auditing Standards.

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