

Modelling the effect of cognitive variables on group brainstorming using system dynamics

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Group Support Systems (GSS) researchers have studied group interaction effects on various productivity variables. The current research is concerned with promoting productivity of idea generation output on a group brainstorming task, and builds on previous research (Azevedo-Carns, 1997, 1998; Vennix, 1996) on the dynamics of group interaction on generative tasks (McGrath & Hollingshead, 1995).

A System Dynamics model represents the effects of key cognitive variables on the quantity of ideas generated under three conditions: Nominal, Face-to-Face, and Electronically Interacting groups. This model allows testing of the differential effects of ideas generated by internal stimulation (individual's long-term memory search) versus primarily external stimulation (group-generated ideas) on the group productivity. This is a significant measure since several researchers have found that the quality and creativity of the ideas generated are highly correlated with the quantity of ideas generated (Parnes, Noller, Biondi, 1977; Parnes, 1962; and Osborn, 1957).

By focusing on causal relationships between individual cognitive and group variables, this research attempts to better understand the interaction of cognitive processing factors with production blocking (Diehl & Strobe, 1987), and other social factors known to affect interacting group processes. The model also controls for individual differences in participant' fluency.

Model testing provides insight into the conditions likely to increase the total quantity of ideas generated under specific conditions, addressing the question: Under what conditions will specific types of interaction increase productivity on a group brainstorming task? Implications of the findings for future theoretical and practical applications will be discussed.