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Cognitive Stimulation in Computer-Supported Idea Generation

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Cognitive stimulation and cueing

A non-solved problem in the research on group brainstorming is the failure to find an increase in performance due to reciprocal cognitive stimulation or cross-cueing (Ziegler, Diehl & Zijlstra, 2000). Cross-cueing was also studied by Basden, Basden, Bryner & Thomas (1997) who run a set of experiments on the recall of studied information by groups of individuals working together. In these experiments it was found that cross-cueing leads to collaborative inhibition. According to Basden et al (1997) collaborative inhibition like part-list cueing is produced by a disruption of individual retrieval strategies. From this explanation the question arises if this disruption of retrieval strategy will also occur in case of self-cueing instead of cross-cueing. Therefore we designed an experiment in which experimental conditions with self-cueing were compared to a control condition without cueing.

The question remains which ideas are best for cueing. Idea generation follows similar retrieval strategies like other memory tasks. Ideas are generated in clusters regarding temporal sequence and content (Diehl, 1991). Ideas preceding vs following a short vs long pause were selected and used to find out how stimulating they are for an individual unable to come up with new ideas on his or her own.

Experimental study

Method and Material

Participants: 79 students

Design: 2x2 design, length and position of the pause as criteria for selection rules of the stimulus ideas; control condition as baseline without stimulation

Dependent measures: quantity and quality of produced ideas

Task: individual brainstorming task. First part: free idea generation, lasting 15 minutes. Second part: idea generation lasting 20 minutes. Participants received 10 stimulus ideas selected from own ideas generated in the first part.

Results

Quantity of ideas:

Results of an ANOVA on number of ideas:

No significant main effect for cognitive stimulation (experimental conditions vs control condition; $p > .10$)

No significant main effect for length of pause and position of pause, but a nearly significant interaction ($F(1,50)=3.53$; $p=.066$).

Length of pause makes no difference if pause is before the stimulus. If pause is after the stimulus however, cognitive stimulation is successful in case of a long pause but not in case of a short pause ($F(1,24)=4.23$; $p=.051$).

Quality of ideas

Results of an ANOVA on number of high quality ideas (upper third regarding originality, feasibility and effectiveness):

No significant main effect for cognitive stimulation (experimental conditions vs control condition; $p > .10$). No significant main effect for length of pause but for position of pause ($F(1,50)=4.775$; $p=.034$)

Discussion

Cognitive stimulation does not facilitate idea generation per se. Only those stimulus ideas preceding a long pause improve idea generation regarding the number of ideas. With respect to the number of high quality ideas it seems to be of relevance that the stimulus idea is not the first one in a cluster.

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