

Can Surprise Enhance Creativity?

Except from the early experimental work undertaken by Gestalt psychologists like Wertheimer in 1945, creativity research was seriously neglected by psychology (Guilford, 1950). Joy Paul Guilford in his farewell discuss as president of the American Psychological Association in 1950, is said to have begun creativity research in psychology. He proposed to do so via *divergent thinking*. A divergent thinking task is defined as a task where the goal is to generate multiple solutions to an open problem. The dependent variables in these tasks are ideational fluency, flexibility and novelty (Dietrich & Kanso, 2010)

In the last two decades, research in the performance and enhancement of creativity has grown. However, few studies focus on surprise as a factor influencing creativity, even when theoretical basis exist to believe that a significant relationship between surprise and creativity occur.

The Componential Theory of Creativity

The componential theory of individual (or small team) creativity (Amabile, 1997) includes three components of creative performance:

1. Domain relevant knowledge and skills.
2. Creativity relevant processes (cognitive and working style, divergent thinking skills).
3. Task Motivation (variables determining the approach of the individual to the task) (Conti, Coon & Amabile, 1996).

The theory suggests that the creativity will be higher the higher the level of each component (Björkman, 2004).

Intrinsic Task Motivation

Intrinsic motivation is defined like the interest, curiosity, involvement, satisfaction and positive challenge that the individual shows towards the task (Conti et al., 1966).

It is possible to influence the domain skills and the creativity process components trough the social environment but this influence will be stronger and more direct on the motivation component.

Research has shown how even short or few alterations in the environment have an impact in individual intrinsic motivation and creativity on a task (Amabile, 1997).

Positive Affect and Intrinsic Motivation

Over the past two decades research has shown that positive affect facilitates cognitive processes and behaviour, including intrinsic motivation (Isen & Reeve, 2005).

However, positive affect leads often to higher creativity but sometimes to lower creativity. These contradictory outcome can result from treating positive affect as a unitary mechanism instead of considering different components that might affect creativity in various ways (Filipowicz, 2006).

Surprise as a Component of Positive Affect

In a study by Filipowicz (2006) different components of positive affect (pleasantness, elation, surprise) were tested to know their mediation in the performance on a creative task. Surprise was found to fully mediate the relationship between positive affect and creativity.

It is possible that surprise might lead to creativity because participants interpret the arousal as intrinsic motivation. Moreover, might be that surprise reduces the fear of participants to unusual or crazy ideas (Ziv, 1983)

In this study we aim to increase our understanding about factors that enhance creativity. To do so, a divergent thinking task developed for organizational groups will be used, DOG, divergent thinking in organizational groups (Hoff & West, 2013) .

We expect to find an increase in creativity in the tasks where "an element of surprise" is introduced.

We expect that self-perception of creativity and team work will not influence the final creativity scores.

Methodology

Participants

Total number of participants was 18, divided into 6 groups of three. A questionnaire was used to gather some basic demographic characteristics and measure self-perceived creativity and team work.

Materials

The abbreviated version of Divergent Thinking in Groups, with two tasks, was used. In the first one, participants had to come up with creative ideas for a multi-tool with at least five functions for urban life, and

in the second task for a multi-tool that is suitable to natural/country style of life.

Procedure

Participants filled out the questionnaire in the beginning, and then they chose a group leader/sketcher, which had to write down all the ideas, and a time-keeper for the tasks. They started with task 1, after which in half of the groups, followed the “Element of Surprise” (Condition A), in which a woman in a dress with a swimming cap on, comes into the room and dances for a minute. Then she leaves the room, and the group can start with task 2. Three other groups did not have the “Element of Surprise”, they continued with task 2 right after task 1.

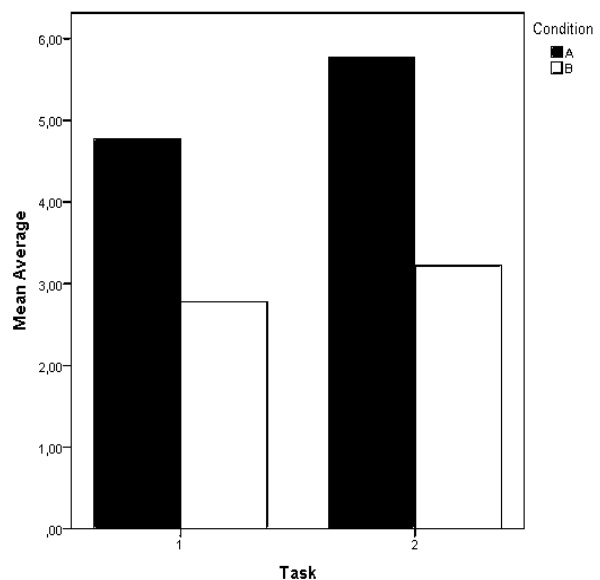
Results

Kolmogorov-Smirnov test of normality was significant=0,017. Non-parametric tests for not normal distributions were used.

Mann-Whitney U Test showed a significant difference in creativity between groups $p < 0.05$ in Condition A (Element of Surprise) and groups in Condition B (Control group) when comparing both tasks. The difference between groups in task 2 was not significant but a definite trend can be observed with higher scores in creativity in condition A.

Inter-rater reliability is good with Cronbach's Alpha = 0,866.

No correlations were found between self-perceived creativity and group work with final scores in creativity. interestingly, perceived creativity was negatively correlated with actual creativity.



Graph 1: Difference in creativity between condition A (Element of Surprise) and condition B (Control Group) on both tasks.

Conclusion

The study aimed to evaluate if an element of surprise introduced in a divergent thinking creativity task, would increase creativity. Based on previous research (Filipowicz, 2006), surprise was considered an essential component of positive affect that could help participants to "think out of the box" and stimulate more original ideas.

While the difference in creativity was not significant between the experimental and control groups, the results were marginal and a definite trend can be observed when plotted. Groups where the surprise was introduced (Condition A) showed more creativity than controls (Condition B).

The second hypothesis of the present study, that self-perceived creativity and team work will not influence the final score, is confirmed in line with other studies in the area.

Limitations of the study are the short sample and no control of emotional reactions after presentation of the stimulus in the experimental groups. Future research may benefit from investigating, through an interview or questionnaire, how participants perceived the "element of surprise".

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