Creative Feelings: The Effect of Mood on Creative Ideation and Evaluation

Paul T. Sowden and Leah Dawson
School of Psychology, University of Surrey, Guildford, Surrey, GU2 7XH, UK
p.sowden@surrey.ac.uk

ABSTRACT
Research has found mixed effects of mood on creative problem solving. Here we examined the effects of mood on two components of creative problem solving; ideation and evaluation. After induction of positive, negative or neutral mood participants completed ideation and evaluation tasks. Results showed that a positive mood facilitates ideation whereas a negative mood facilitated evaluation. Persons in a negative mood set their criterion for usefulness of ideas higher than did those in a positive mood. This would lead to continued search for optimal solutions and improve performance on creative problem solving tasks in which the quality, rather than quantity, of solutions is important.

Author Keywords
Creativity, affect, ideation, evaluation, usefulness

ACM Classification Keywords
Categories and subject descriptors: H.1.2 [Model and Principles]: User/Machine Systems --- human factors, human information processing

General Terms
Experimentation

INTRODUCTION

Creativeness is often defined in the literature in terms of novelty and appropriateness. That is, creative outcomes must be both original and useful [12]. In affect and creativity research, many researchers have found results supporting the "positive-mood-promotes-creativity" view [e.g. 9,11]. However, there are many other findings that cast doubt on this view [2,5]. Considering the type of task used in creativity experiments may help clarify some of the discrepancies found in the mood-creativity literature. One possibility, arising from cognitive tuning theory [6], is that a participant's mood signals to them the current situation. A positive mood indicates that the situation is safe and may encourage a relaxed and playful approach to situations, using simplifying heuristics, exploring novel possibilities, and elaborating on unusual, creative associations. In contrast, a negative mood informs the individual that the current situation is problematic and that negative outcomes are possible, which may encourage them to avoid such risky approaches, favouring instead a more exacting, detail oriented, processing style. This theory therefore predicts that the relaxed processing style of participants in a positive mood may favour performance on tasks requiring pure generation of ideas, such as divergent thinking tasks [cf. 3,7]. Conversely, the detail oriented processing associated with negative mood may lead to better performance when evaluating the usefulness of creative ideas is required. In agreement with this, positive moods worsen performance on insight problems, which require evaluation of whether a solution actually solves the problem, whereas negative moods enhance performance [10]. Here the effects of positive and negative mood on ideation and evaluation are explored. By explicitly testing the effect of mood on evaluation we extend previous work that has only been able to speculate post-hoc about an effect of negative mood on evaluation.

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METHOD

Thirty six students from the University of Surrey aged 18 to 23 years (mean age 19.6) took part in the study. We adapted the GenEva task [8]. Participants were required to generate solutions to one of two problems: 1) what could be done to reduce aggressive behaviours of car drivers? or 2) if schools were abolished, what could you do to try to become educated? They also made ratings to evaluate another participant's answers to the other problem. Previously, the GenEva task has been used to evaluate originality of ideas but here we also evaluated usefulness as this is central to the definition of creativity. Participants were assigned to a positive, neutral or negative mood condition. Prior to completing the generation and evaluation tasks they watched one of three, 4-7 min, film clips to induce the relevant mood (positive condition – comedy with Mr Bean; negative mood - film clips relating to the genocides in Rwanda and Darfur; neutral mode – a film explaining how to watch TV through a computer monitor). After watching each film clip the participants completed the Self-Assessment Manikin [4], a pictorial method devised to assess the pleasure, arousal and dominance associated with a person's emotional reaction to an event. Analysis of participants' responses confirmed that the film clips led to the appropriate variations in mood across conditions ($F(2,33)=3.54$, $p=0.04$).

Scoring procedure

For the generative part of the task three variables were measured: fluency (the number of solutions generated),

flexibility (the number of different categories of ideas), and originality (1- the frequency of a given solution / the total sample size). For the evaluative part of the task, we assessed *accuracy* of both originality and usefulness evaluations. The difference between a participant's ratings of originality and the actual originality calculated above indicated their accuracy. The difference between their usefulness rating and those of a set of three judges (derived through the Consensual Assessment Technique [1]) indicated the accuracy of their usefulness evaluation.

RESULTS

In terms of idea generation, participants in the positive condition produced more solutions than those in the neutral and negative conditions ($F(2,33)=3.54$, $p=0.04$). They also produced solutions from more categories than participants in the neutral condition, who produced solutions from more categories than those in the negative condition ($F(2,33)=5.61$, $p=0.01$). However, there was no difference between conditions in originality ($F(2,33)=1.60$, $p=0.22$).

In terms of idea evaluation, there were no differences in accuracy of originality evaluation between conditions. However, participants in the negative condition were significantly more accurate in their evaluations of usefulness than participants in the positive condition who tended to overestimate usefulness ($t(33)=2.13$, $p=0.02$). In addition to these differences in accuracy of usefulness evaluation, participants in the positive condition gave higher ratings of usefulness per se than participants in the negative condition ($F(2,33)=3.62$, $p=0.04$). Note that this rating ignores the judges' assessments of usefulness and simply explores whether participants give different ratings of usefulness as a function of their mood state.

DISCUSSION

The current study has confirmed previous studies in which a positive mood improves performance on ideational tasks [e.g. 9,11] and, compared to a negative mood, worsens performance on tasks that require an evaluative component [e.g. 10]. Furthermore, the results extend previous research concerning the effect of negative mood on creative problem solving. Previous work has found that a negative mood is beneficial for success on insight problem tasks. The present findings suggest that a negative mood encourages evaluations of reduced usefulness. This is likely to encourage continued search for an optimal solution resulting in more useful solutions and more accurate evaluation of their usefulness. This may therefore improve performance on problem solving tasks in which the quality, rather than quantity, of solutions is important

From a practical viewpoint, these findings have implications for settings in which creativity and innovation are important. For example, changing mood state at different stages of the design process might enhance product design. Positive mood might support initial idea generation whilst switching to a negative mood state might enhance the evaluation of those ideas. Modern technologies provide many opportunities for inducing such mood switching and might be used to help realise the potential benefits of varying mood state on creativity.

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