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AUTHOR Amabile, Teresa M.
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ABSTRACT

In a test of intrinsic motivation hypothesis of creativity, 60 undergraduate women did an artistic creativity task with either the expectation of receiving a reward or no expectation of reward. Reward was crossed with choice in task engagement, such that half of the reward Ss contracted to do the task in order to receive reward, and half simply received the reward as a bonus. As expected, reward and choice interacted significantly; the lowest creativity was exhibited by subjects who had contracted with the experimenter to do the task in order to receive the reward. Results suggest that creativity can be undermined by reward that is presented as contingent upon task engagement. (Author/CL)

Social Influences on Creativity:

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Teresa M Amabile

Brandeis University

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Abstract

In a test of the intrinsic motivation hypothesis of creativity, women did an artistic creativity task with either the expectation of receiving a reward or no expectation of reward. Reward was crossed with choice in task engagement, such that half of the reward subjects contracted to do the task in order to receive reward, and half simply received the reward as a bonus. As expected, reward and choice interacted significantly; the lowest creativity was exhibited by subjects who had contracted with the experimenter to do the task in order to receive reward.

Social Influences on Creativity:
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Teresa M. Amabile

Brandeis University

The letters of the great writer Fydor Dostoevsky contain a strangely disturbing story:

> And as for me, this is my story: I worked and was tortured. You know what it means to compose? No, thank God, you do not! I believe you have never written to order, by the yard, and have never experienced that hellish torture. Having received in advance from the Russy Viestnik so much money (Horror! 4,500 rubles). I fully hoped in the beginning of the year that poesy would not desert me, that the poetical idea would flash out and develop artistically towards the end of the year, and that I should succeed in satisfying everyone... but on the 4th of December... I threw it all to the devil. I assure you that the novel might have been tolerable; but I got incredibly sick of it just because it was tolerable, and not positively good -- I did not want that. (Allen, 1948, p. 231)

Dostoevsky complains, in essence, that his creativity deserted him just when he had been given a lucrative contract for writing, precisely because he had been given that contract. He seems to be saying that this reward, this external inducement, destroyed his creativity.

The intrinsic motivation hypothesis of creativity proposes that intrinsic motivation is conducive to creativity, whereas extrinsic motivation is detrimental (Amabile, 1983a; 1983b). In other words, people should be most creative when they feel motivated primarily by the intrinsically interesting, enjoyable, satisfying, and challenging aspects of the work itself, and not by extrinsic constraints. This hypothesis is based on McGraw's (1978) proposition that extrinsic motivation enhances performance on algorithmic tasks (simple, straightforward tasks), but undermines performance on heuristic tasks (open-ended, complex tasks where some search is required). Since creativity tasks are, by definition, heuristic (cf. Amabile, 1983a), they should show adverse performance effects of extrinsic motivation.

According to self-perception theory (Bem, 1972) and intrinsic motivation theorists (e.g., Deci, 1975; Lepper, Greene, & Nisbett, 1973), extrinsic constraints -- such as reward for task engagement -- will undermine intrinsic motivation and induce extrinsic motivation only to the extent that they lead people to view the task as a means to the external goal. If this contingency is not clear and salient,

reward for task performance should not have detrimental effects.

Thus, according to the intrinsic motivation hypothesis of creativity, external reward should undermine creativity only if it is seen as clearly contingent on task engagement. If people contract to do the task in order to earn reward, their intrinsic motivation and creativity should be adversely affected. If the reward is simply presented as a bonus that has not been contracted for, there should be no such adverse effects.

There is some evidence that reward has negative effects on creativity. For example, in two experiments, Glucksberg (1962; 1964) gave subjects set-breaking problems that required using objects in nonstandard ways. Those subjects who had been offered monetary prizes for solving the problems took significantly longer to break set than did subjects not expecting money. In a similar study using Luchins's (1942) water jar problems, McGraw and McCullers (1979) found that subjects working for reward took significantly longer to solve the final, set-breaking problem and made more errors on that problem than did subjects not promised reward.

Kruglanski and his colleagues (Kruglanski, Friedman, & Zeevi, 1971) found negative effects of reward on both performance and expressed interest. They gave two verbal creativity tasks to high school students who either had or had not been promised a reward for their participation. Nonrewarded subjects were significantly superior on both measures of creativity. Moreover, there were nearly significant differences

between the two groups on two intrinsic interest measures: subjects' expressed enjoyment of the activities and their willingness to volunteer for further participation.

Although they provide supporting evidence, none of these previous studies has directly examined the notion that only contracted-for reward will undermine creativity. The present study was designed to do so. Some subjects were explicitly asked if they wanted to do an artistic activity in order to earn a monetary reward. Others were simply given the activity and told that they would receive payment afterwards; no choice was offered, and no verbal contract was made. Subjects were also given a choice or no choice about their participation under nonrewarded conditions in this 2 x 2 (reward x choice) factorial design.

Method

Subjects

Sixty undergraduate women were recruited for a study on "personality impressions." They came to the laboratory with the understanding that they would receive one hour of experiment credit toward an introductory psychology course requirement. Subjects were randomly assigned in equal numbers to the four conditions of the experiment. All sessions were conducted by a female experimenter.

Procedure

Subjects participated in individual sessions. When they arrived at the laboratory, the experimenter asked them to read some information about a stimulus person and then to form impressions of that person from a videotape. However, as she attempted to show the videotape, it became clear that the videorecorder was "malfunctioning." Since only about 10 minutes of the hour had elapsed, it was assumed that subjects would view as reasonable a request to participate in another experiment during this time. These two completely different "experiments" were presented to allow subjects in the choice conditions a self-perception that they had freely chosen to do the second task, having completed any obligations they might have felt in coming to the laboratory in the first place. The second activity presented to subjects was the creativity task, and it was here that the independent variable manipulations were delivered.

To subjects in the choice conditions, the experimenter said that she was doing another experiment, and asked if they would agree to do that experiment in the remaining time. To subjects in the nonchoice conditions, the experimenter said that she would use the remaining time by having them do another experiment of hers. Subjects in the nonreward conditions were told nothing about payment (beyond the experiment credit that all received), but subjects in the reward conditions were told they would receive $2 for doing the alternate experiment.

The crucial difference between contracted-for and noncontracted-for reward was implemented by having subjects in the contracted-for condition (Reward - Choice) make an explicit verbal agreement with the experimenter to participate in the alternate experiment for $2. After describing the alternate experimental task (spending about 15 minutes making a paper collage), the experimenter said to these subjects, "I can give you credit for the part you just did, and since I'm paying subjects for the second study, you can earn $2 if you agree to do the collage. Would you be willing to do that for $2?" To subjects in the noncontracted-for condition (Reward - No Choice), she said, "I'm paying subjects $2 in that study, so what I'll do is give you credit for the part you just did and you'll earn $2 for doing the second study."

All subjects in the choice conditions did, in fact, agree to participate in the collage study. After the experimenter delivered the crucial instructions, she left subjects alone for about 15 minutes to make a collage using a standard set of materials that included cardboard, glue, and several pieces of colored paper in various sizes and shapes.

Results and Discussion

A consensual technique for the assessment of creativity was used to obtain creativity measures on the collages produced by subjects in this study (cf. Amabile, 1982; 1983a). Fourteen artists independently viewed and rated each of the 60 collages on a 40-point creativity

scale. Since the interjudge reliability of these ratings was acceptable (.75), a sum over all judges' creativity ratings was computed for each collage.

A 2 x 2 analysis of variance on the creativity ratings revealed the predicted interaction between reward and choice, F (1, 56) = 5.23, $p < .026$. As illustrated in Figure 1, this interaction does

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Insert Figure 1 here

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result, in part, from the low creativity of subjects in the contracted-for reward group (Reward - Choice). Indeed, as predicted, the lowest level of creativity was found in this condition. Surprisingly, the highest level of creativity was produced by subjects in the noncontracted-for reward condition (Reward - No Choice). There was no significant main effect of reward. A significant main effect of choice is completely qualified by the interaction.

By paired comparisons, only the Reward - Choice condition is significantly different from the others. It is significantly lower in creativity than the Reward - No Choice condition (t (28) = 3.70, $p < .001$) and the No Reward - No Choice condition (t (28) = 2.53, $p < .017$), and it is nearly significantly lower than the No Reward - Choice condition (t (28) = 2.00, $p < .055$).

These results demonstrate that creativity can be undermined by reward that is presented as contingent upon task engagement. In its effects on creativity, contracted-for reward is similar to other extrinsic constraints, such as evaluation expectation, surveillance, competition, and restricted choice (Amabile, 1979; 1982b, in press; Amabile & Gitomer, 1984; Amabile, Goldfarb, & Brackfield, 1982). This finding fits well with the intrinsic motivation hypothesis of creativity, which proposes that the undermining is mediated by a decreased intrinsic motivation toward the task (Amabile, 1983a, 1983b), taken together with the proposition made by several theorists that intrinsic motivation will be undermined by reward only when the task is perceived as a means to obtaining the reward (Calder & Staw, 1975; Deci, 1975; Kruglanski et al., 1971; Lepper et al., 1973; Ross, 1977; Staw, 1976).

This study presents an advance over previous intrinsic motivation research in two ways. First, it provides a particularly stringent test of the necessity for a perceived means-end relationship between task and reward before detrimental effects will be observed. Not only were subjects in both reward conditions expecting to receive payment but, in both conditions, the money was actually presented as a reward for task engagement. The only difference between the two conditions lay in the subjects' explicit agreement to engage in the task in order to obtain the reward or the absence of any such agreement. The second important difference between these and previous

intrinsic motivation studies is the demonstration of undermining effects on actual performance (creativity) rather than on subsequent interest.

This research adds to previous demonstrations of negative effects of reward on creativity by extending the effect to a new creativity task (artistic production, rather than verbal production or set-breaking in problem-solving). Moreover, these results suggest the interesting possibility that creativity might actually be enhanced by the introduction of noncontracted-for reward. Perhaps subjects in the Reward - No Choice condition, who exhibited the highest creativity, viewed the money as an unexpected bonus which created a generally positive affect. This, and the possibility of such affective mechanisms influencing creativity along with (or instead of) cognitive mechanisms, present attractive opportunities for future research.

The implications of this research are intriguing. It may be that commissioned work will, in general, be less creative than work that is done out of pure interest. And, within an ongoing work setting, it may be that tying specific rewards to specific tasks will be less conducive to creativity than simply allowing choice of activities without specific pay-offs attached to each task.

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Requests for reprints should be sent to Teresa M. Amabile, Department of Psychology, Brandeis University, Waltham, Massachusetts, 02254.