Reinvestigating the Effects of Promised Reward on Creativity

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In a pivotal study, Eisenberger and Rhoades (2001) recently put forth evidence that promised reward enhances creativity when the reward is clearly contingent upon creative, as opposed to conventional performance. The present study reinvestigated this finding, additionally examining the role of reward framing (i.e., gain vs. non-gain) as well as that of expected competence information and self-determination. In both experiments, only non-gain framed rewards reliably enhanced creativity, suggesting that that the mental construal of a reward (as either a potential gain or non-gain) is an important moderator of its effects on creative generation. Results also indicated that the facilitative influence of promised reward on creativity is due to the offering of an incentive per se and not the concomitant prospect of receiving normative competence feedback. Finally, although it was influenced by reward framing, perceived self-determination did not mediate the effect of promised reward on creativity.

Each day, countless employers, educators, and parents promise rewards to those in their charge as a means of spurring their creativity. However, over the past three decades, a debate has raged in scientific circles over the effects of such motivational tactics on the propensity to generate innovative solutions. As recently reviewed by Eisenberger and Shanock (2003), one intellectual camp, espousing a learning theoretical position, has argued that promised reward should bolster creativity by establishing a contingency between novel behavior and reinforcement. This contention has been supported by a number of studies, in which reward offered for novel performance has indeed facilitated creativity (Winston & Baker, 1985; Stokes, in press). Unfortunately, in most of these studies, the control conditions employed included neither the promise of reward nor any information that creativity would be required for successful task performance. As such, it is unclear from these studies whether it is promised reward per se or merely the provision of information regarding the creativity requirements of the task that facilitates creativity (Eisenberger & Shanock, 2003).

The second, competing intellectual camp, whose views are consistent with a humanist tradition (Eisenberger & Shanock, 2003), has made the very opposite prediction, arguing that promised reward should undermine creativity by reducing perceived autonomy (i.e., the individual’s sense that she is working on the task of her own volition) and thereby undermining the intrinsic motivation posited to drive innovation (Amabile, 1996; Deci & Ryan, 1985; Deci, Koestner, & Ryan, 1999). It has also been proposed within this camp that promised rewards diminish creativity by drawing attention toward the incentives themselves and away from the creative process (Amabile, 1983; 1996). Ironically, in ostensible contradiction of the findings of the learning theoretical camp, the view that promised reward undermines creative performance has itself garnered support from a multitude of studies (Amabile, 1996).

Regrettably, as argued by Eisenberger and Shanock (2003), the aforementioned studies also suffer from important limitations that call their support for the “humanist” account into question. First, while
researchers in the second camp have proposed that the aversive sense of decreased autonomy (i.e., increased external control) induced by promised reward mediates its decremental effect on creativity, only a small handful of studies have ever attempted to directly assess the influence of reward on perceived autonomy. Moreover, according to Eisenberger, Rhoades, and Cameron (1999), in these few cases, reward has been found to enhance rather than diminish the perception that the task was freely chosen. In accounting for this finding, Eisenberger et al. (1999) suggest that people intuitively recognize that the need to offer rewards signifies the reward-giver’s lack of control over the prospective rewardee. They also argue that people generally construe pursuit of a promised reward as optional, and thereby as freely-chosen (cf. Skinner, 1971).

As pointed out by Eisenberger and Shanock (2003), another limitation of studies demonstrating a decremental effect of promised reward on creativity is that participants in these studies were generally not informed that reward would be contingent upon creative performance. As such, participants may have assumed that conventional, uncreative performance constituted the surest, quickest means toward that end, leading to reductions in originality amongst those offered performance-contingent rewards.

Although there are various and sundry additional issues that surround this long-standing debate (see e.g., Collins & Amabile, 1999; Eisenberger & Shanock, 2003), Eisenberger and Rhoades (2001, Study 3) recently took an important step toward resolving the controversy by conducting an elegantly simple experiment, one that rectified the major methodological problems introduced by both intellectual camps. Here, as part of an ostensibly “class project,” students attending an introductory psychology lecture were asked to generate creative titles for a short story. Students were either promised reward for high creativity (“If your titles are judged to be among the bottom half of the students in this class in terms of creativity, you will not receive a financial reward next week for you to keep.”); Eisenberger & Rhodes, 2001, p. 733) or given no such promise. The titles produced were rated for creativity by independent coders. It was found that students who were promised reward for creativity generated titles judged to be more creative than those of students who were given identical creativity instructions without promised reward. This result suggests that promised reward bolsters innovation when all participants are informed that the task at hand requires creativity and when those promised reward are directly informed that reward administration is specifically contingent upon creative performance.

Needless to say, the findings of Eisenberger and Rhoades (2001) offer relatively strong support for the view, long championed by learning theorists, that promised reward enhances, rather than undermines creativity. However, as compelling as Eisenberger and Rhoades’ (2001) results are, they themselves may be vulnerable to at least one humanistically spirited counterattack. Specifically, as psychologists have learned from the work of Kahneman and Tversky (e.g., 1979; 1984) and Higgins (e.g., 2000; Crowe & Higgins, 1997; Higgins, Shah, & Friedman, 1997), due to both ideographic as well as situational factors, human beings can mentally construe any performance-contingent reward as either representing a prospective gain (i.e., “If I meet performance standard X, I will receive reward Y.”) or as representing a prospective non-gain (i.e., “If I fail to meet performance standard X, I will not receive reward Y.”). Given this well-supported assumption, it is possible that construing a promised reward as a potential non-gain (i.e., as a type of aversive event) may elicit feelings of pressure (i.e., reduced autonomy) and thereby reduce, as opposed to enhance creativity. Following this notion, if Eisenberger and Rhoades (2001) were to have framed their self-same promised reward in terms of the prospect of non-gain (e.g., “If your titles are judged to be among the bottom half of the students in this class in terms of creativity, you will not receive a financial reward next week for you to keep.”), they may have indeed found a decremental effect of promised reward on creativity.

However, it is also possible that non-gain framing of promised reward will instead yield an incremental effect on creativity, one equivalent or even stronger in magnitude than that produced by the gain framing employed by Eisenberger and Rhoades (2001). According to prospect theory (Kahneman & Tversky, 1979), people are generally loss-averse, suggesting that the absolute subjective value of a loss is greater than that of an objectively equivalent gain. Assuming that non-gains are psychologically akin to losses, individuals may therefore work harder to be creative in order to avert what they mentally construe as the loss of a promised reward than to attain what they construe as a prospective gain (see also, Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001).

In either case, the present study was aimed at constructively replicating Eisenberger and Rhoades’ (2001, Study 3) provocative experiment, exploratively assessing the influence of reward framing (gain vs. non-gain) on creative generation.

EXPERIMENT 1

Overview

The procedure for Experiment 1 was analogous to the aforementioned study by Eisenberger and Rhoades (2001, Study 3) with the following noteworthy
exceptions: First, for the sake of conceptual replication, a different short story was used, borrowed from another of Eisenberger and Rhodes’ studies (2001, Study 2), for which participants were to generate creative titles. Second, whereas Eisenberger and Rhodes (2001, Study 3) employed only 3 independent creativity coders, for the sake of ensuring interrater reliability, 22 coders were used. Third, whereas Eisenberger and Rhodes had offered an unspecified “financial reward” for creativity, the reward was concretized in the present study by offering the prospect of additional experimental credit. Finally, and most critically, a non-gain framed reward condition was appended.

Participants

Participants were 81 undergraduates at the University of Missouri–Columbia who were enrolled in an introductory psychology course. They were recruited to participate via a departmental website that offered a (standard) single credit for participation in the study. (They were required to earn 10 participation credits over the course of the semester). Participants were run in groups and received 2 course credits for participation (see below).

Procedure

Upon arrival at the lab participants signed consent forms to participate in an ostensible study concerning “creativity and personality processes.” Afterward, they were seated and randomly assigned to complete one of three paper-and-pencil surveys. In the gain and non-gain framing conditions, participants read the following:

Welcome to the study!

Instructions: Unlike other studies in which you may have participated, in this study, we will be giving out a bonus based on performance. Specifically, although this study was advertised as worth a single credit, there is the possibility of getting a bonus of one credit (worth 30 minutes extra participation) for a total of 2 credits.

Essentially, we are interested in examining processes involved in creative thought. To do so, we first need to collect a large set of creative responses. Therefore, we will ask you to complete a task on which your responses will be scored for their creativity.

Following these instructions, participants were provided with a paragraph-long short story (see Eisenberger & Rhoades, Study 2, “snowy night story”) and asked to print 3 creative titles that “fit” the story in the 3 numbered spaces provided below it. Participants were not timed but simply informed on a subsequent page that they were to bring their completed packets to the experimenter and did not need to wait for any other participants to finish. After returning their packets, participants were debriefed, informed that they would be receiving 2 credits for participation, and released.

Data Coding

Participants generated 195 different titles for the story. These titles were given to a convenience sample of 22 undergraduate coders who were presented with the short story and told that participants had been asked to read and provide creative titles for the story. Coders were instructed to first read through all of the titles generated and to then rate the creativity of each title on a 5-point scale anchored at 1 (not at all creative) and 5 (very creative). Following Amabile’s (1996) recommendations, participants were encouraged to use their own subjective judgment in making their ratings. Moreover, to ensure against floor or ceiling effects, coders were asked to try to use the full range of the scale, judging the creativity of the responses relative to one another, such that the responses with the lowest creativity in the set get very low scores and those with highest creativity in the set get high scores.

In contrast, those in the non-gain framing condition read:

IF YOUR RESPONSES ON THIS TASK ARE JUDGED TO BE AMONG THE BOTTOM HALF OF PARTICIPANTS IN TERMS OF CREATIVITY, YOU WILL NOT RECEIVE THE BONUS OF 1 EXPERIMENTAL CREDIT!

Participants in the control condition simply read:

Welcome to the study!

Instructions: We are interested in examining processes involved in creative thought. To do so, we first need to collect a large set of creative responses. Therefore, we will ask you to complete a task on which your responses will be scored for their creativity.

At first glance, it may seem that requiring only 3 titles stood to unduly constrain creativity by enabling participants to report only mundane initial responses. However, unlike in brainstorming tasks, in which the first responses generated by participants may indeed be relatively banal, in the present task, participants were motivated to report only the most creative options they could think of, presumably leading them to withhold mundane initial solutions and continue working until more innovative options were produced.
get very high scores. Interrater reliability for creativity ratings was $x = .84$. The ratings were used to compute a creativity score for each participant (representing the average of the mean creativity ratings for each of the 3 titles generated).

**RESULTS AND DISCUSSION**

Mean creativity scores within each experimental condition were as follows: $M_{\text{gain}} = 2.20$ ($SD = 0.44$); $M_{\text{control}} = 2.11$ ($SD = 0.36$); and, $M_{\text{non-gain}} = 2.41$ ($SD = 0.52$). An ANOVA revealed a borderline significant main effect, $F(2, 78) = 3.10, p = .050, \eta^2 = .07$, signifying that this pattern is on the cusp of conventional reliability. It was therefore opted to decompose the effect using simple comparisons. These suggested that the slight improvement in creativity demonstrated by the gain framed participants relative to those in the control group was nonsignificant, $t < 1$, whereas the somewhat larger improvement shown by non-gain framed participants compared to those in the control condition was reliable, $t(78) = 2.43, p < .02$. Complex comparisons suggested that creativity in the non-gain group was also reliably higher than that in the gain and control groups combined, $t(78) = 2.38, p < .02$.

Surprisingly then, these findings did not conceptually replicate those of Eisenberger and Rhoades (2001, Study 3)—gain-framed promised reward did not reliably bolster creativity. Rather, creativity was enhanced by promised reward when the incentive was framed as a prospective non-gain. As such, these results suggest that the mental construal of a reward as a gain versus a non-gain may be an important moderator of the effects of promised incentives on creative generation. Notably, although the present effects were unexpectedly driven by the non-gain framing condition, they still serve to support the contention that promised reward, if anything, enhances rather than undermines creativity.

Still, it remains a mystery why this study failed to conceptually replicate the work of Eisenberger and Rhoades (2001). One possibility is that the participants in Eisenberger and Rhoades’ original study, who were administered the task in an actual classroom setting as part of an ostensible “class project,” perceived the task as evaluatively threatening, akin to an exam. If so, they may have been more likely to focus upon the possibility of failure in attaining the incentive and to thereby mentally represent the reward as a prospective non-gain despite its explicit gain framing. Of course, this is conjectural.

In any event, to determine whether the present effects were replicable, a follow-up study was conducted, this time employing the very same short story originally used by Eisenberger and Rhoades (2001, Study 3). Moreover, the opportunity was taken to directly measure perceived self-determination. This enabled assessment of the contention that promised reward impairs creativity by undermining individuals’ sense of autonomy. Finally, an attempt was made to rectify a confound introduced by Eisenberger and Rhoades in their original work. Specifically, Eisenberger and Rhoades (2001, Study 3) apparently did not inform participants in their control group that they would receive feedback regarding whether they were in the top or bottom half of the class in terms of creativity. This is information that those in the reward group expected to obtain when they received or failed to receive the promised financial bonus. As such, it is possible that the sheer expectation of receiving (in)competence feedback, irrespective of the availability of performance-contingent reward, may have spurred participants in that study to be more creative (cf. Deci & Ryan, 1985).

**EXPERIMENT 2**

**Participants**

Participants were 108 undergraduates at the University of Missouri–Columbia who were enrolled in an introductory psychology course. As in Experiment 1, they were recruited to participate via a departmental website that offered 1 credit for participation in the study. Participants were run in groups and received 2 course credits for participation.

**Procedure**

Essentially, the procedure of Experiment 2 was identical to that of Experiment 1 except that we used the same “popcorn” short story originally used by Eisenberger and Rhoades (2001, Study 3) to permit a closer replication. In addition, after learning that their responses would be scored for creativity, participants in a newly appended “informational” control group were also told that they would be notified as to whether their responses “were in the top or bottom half of participants in terms of creativity.” Finally, after completing the creativity task, participants were administered a survey including items tapping into task enjoyment (“How much did you enjoy the creativity task?”) and self-determination (How pressured did you feel to be creative on the task?; How free did you feel to respond in any way you chose?). Responses were tendered on a 7-point scale anchored at 1 (not at all) and 7 (extremely). Participants were also administered a check on current mood (“How do you feel right now?”), anchored at 1 (very bad) and 7 (very good). The 180 titles generated by participants were rated for creativity by 14 independent coders whose interrater reliability was $x = .96$. 
Mean creativity scores within each experimental condition are displayed in Figure 1. An ANOVA revealed a significant main effect, \( F(3,104) = 4.82, \ p < .004, \ \eta^2 = .12 \), indicating that the pattern of mean differences was reliable. An initial planned comparison revealed that there was no difference between the informational and non-informational control groups, \( t < 1 \). Therefore, these control groups were combined to perform a series of complex comparisons. These revealed that the promised reward groups combined demonstrated higher creativity than those in the control conditions combined, \( t(106) = 3.30, \ p < .002 \), yet as in Experiment 1, this effect was again more robustly driven by the non-gain framed reward group, which itself showed reliably enhanced creativity relative to the composite control group, \( t(106) = 3.79, \ p < .0004 \). When gain framed, promised reward led to only marginally higher creativity relative to the composite control group, \( t(106) = 1.59, \ p < .12 \); however, this effect did trend toward replicating the original findings of Eisenberger and Rhoades (2001, Study 3), which, it should be noted, were obtained with a far larger sample and thereby with added statistical power. Together, these findings conceptually replicate the results of Experiment 1, showing that non-gain framed promised reward significantly bolsters creativity and that gain framed promised reward only enhances creativity to a marginally reliable extent at best. These results also suggest that the incremental effect of promised reward on creativity was not due to the expectation of receiving competence feedback associated with reward (non)allocation.

As a subsequent step in the analysis, the four post-task survey measures were submitted to ANOVAs. These revealed no effects of experimental condition on self-reported task enjoyment, mood, or freedom of choice in task completion (one of two indices of self-determination), all \( F$s $< .1 \). However, there was a reliable main effect of condition on perceived pressure to be creative, the second index of self-determination, \( F(104) = 4.91, \ p < .004 \). As indicated by the pattern of means (see Figure 2), feelings of pressure were lowest in the gain framed reward group, somewhat higher in the control conditions, and highest in the non-gain framed reward group. Critically, a supplementary ANOVA revealed no independent effect of perceived pressure on creative performance and the inclusion of this self-determination index as a covariate did not reduce the reliability of the main effect of experimental condition on creativity. These findings suggest that promised reward may either increase or decrease perceived self-determination, depending upon how the reward is framed. As such they are consistent with the predictions of both the learning theoretical and humanist camps, as described by Eisenberger and Shanock (2003). However, these results are inconsistent with the prediction, advanced by members of both camps (e.g., Eisenberger & Rhoades, 2001; Deci et al., 1999; see Eisenberger & Shanock, 2003, for a review), that perceived self-determination should bolster creativity. Of course, the measure of self-determination at issue was administered well after the manipulation, leaving it relatively open to retrospective biases in self-report.

This study constituted an attempt to reinvestigate the influence of promised reward on creativity by constructively replicating a pivotal recent study conducted by Eisenberger and Rhoades (2001). Specifically, conditions were added to their original design enabling investigation of the role of reward framing (Experiments 1 and 2) as well as that of expected
competence information and self-determination (Experiment 2). In both experiments, promised rewards framed such that they would be construed as prospec-tive non-gains reliably enhanced creativity. Consistent with the work of Eisenberger and Rhoades (2001), gain framed rewards also increased creativity, albeit not reliably. Whereas the reason for this discrepancy between the present findings and those of Eisenberger and Rhoades (2001) is unclear, the present results do strongly support Eisenberger and his colleagues’ overall contention that promised reward, if anything, bolsters creativity when individuals understand that the reward is contingent upon creative, as opposed to conventional performance. The present findings go beyond those of earlier studies by suggesting that the mental construal of a reward (as either a potential gain or non-gain) may be an important moderator of its effects on creative generation (cf. Crowe & Higgins, 1997; Higgins, 2000). Furthermore, the results of this study resolve a confound apparently introduced by Eisenberger and Rhoades (2001) in their original study and show that the influence of promised reward on creativity is due to the offering of an incentive per se and not the concomitant prospect of receiving normative competence feedback. Finally, the present findings suggest that promised rewards may either increase or decrease perceived self-determination depending upon whether they are gain or non-gain framed, respectively. There was no evidence for the notion that perceived self-determination bolsters creativity (cf. Deci et al., 1999; Eisenberger & Shanock, 2003).

Of course, while the results at hand are provocative given the long-standing debate regarding the influence of promised reward on creativity, they may also be very much limited in their generality: Both experiments in this study used a single, relatively unchallenging, creativity task, the ecological validity of which is debatable, promised a single quality and quantity of reward, set a single reward criterion (i.e., performance in the top half of the sample), and sampled from a single population (i.e., undergraduates at a large state university, as also used by Eisenberger and Rhoades, 2001). Myriad possibilities exist as to how each of these factors and others may bear upon the effects at issue. For instance, given the assumed ease and artificiality of the task, participants may have held little intrinsic motivation to complete it from the very outset. If so, promised reward, particularly when framed as a prospective non-gain, may have provided an external impetus to invest creative effort in an otherwise uninspiring task. Following this notion, if baseline intrinsic motivation had been higher, promised reward may have indeed diminished task interest and thereby impaired, rather than enhanced creativity. Again, this is grossly speculative, and at best, only serves to offer a sense of the profound degree of uncertainty that remains regarding the forces that moderate and mediate the influence of promised reward on creativity.

Consequently, while the present findings offer renewed support for the learning theoretical model of promised reward on creativity, heretofore most diagnostically tested by Eisenberger and Rhoades (2001), they by no means suggest that more humanistically-spirited views should be discounted. Methodological shortfalls aside, it seems quite unlikely that the debate between these intellectual camps could have been sustained for more than three decades had the conceptual merits of each camp been any less than highly compelling. As such, future research may benefit more from attempting to address “second generation questions” (Higgins, 1999) as to the circumstances under which each competing prediction holds true, than from attempting to determine which of these eminently respectable, and most likely conditionally valid, intellectual traditions has a lock on the truth.

REFERENCES
