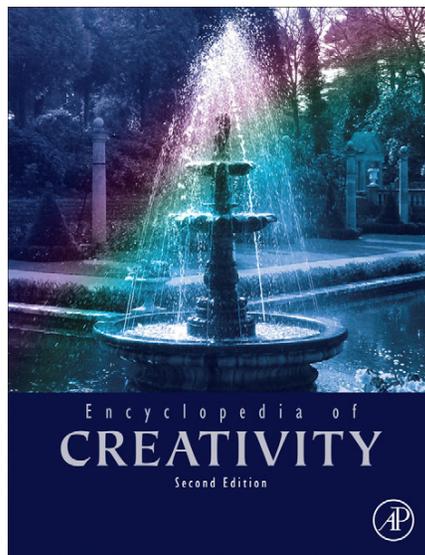


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Rewards and Creativity

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The Reward – Creativity Controversy

Dozens of studies have examined rewards' effect on creativity. Despite a sizable literature, the question of whether rewards enhance or hinder creativity remains controversial. Many creativity scholars and laypersons believe that rewards are an effective motivator for various kinds of performance including creativity. Among other reasons, people who are offered a reward may be more creative because the reward is desirable or because it symbolizes the person's status as a creative person. In contrast, others believe that performance on creative tasks suffers when rewards are offered. Perhaps reward distracts attention from and decreases interest in creative tasks, and lessens perceived control over one's choices.

Ample evidence has been cited to support both positions, as the results of studies examining the relationship between rewards and creativity have been inconsistent. Many studies have found that rewards increase creativity. For example, Robert Eisenberger and Michael Selbst found that children who were rewarded with pennies for creative responses on an initial word construction task subsequently produced more creative responses on a subsequent different picture writing task. In contrast, children who were rewarded for noncreative responses on the word construction task produced less creative drawings on the picture writing task. In contrast, other studies have found that rewards decrease creativity. For example, Arie Kruglanski, Irith Friedman, and Gabriella Zeevi found that high school students promised a reward for their participation were less creative on verbal tasks than were those not promised a reward.

As we shall show, the methodologies used by the researchers asserting positive effects of reward on creativity and those used by researchers asserting negative effects are quite distinct. Lacking an appreciation of these procedural differences, the two sides seem only to grow more vociferous in the advocacy of their original positions, consistent with their disparate ways of viewing human psychology.

We first turn to a discussion of the differing theoretical positions, including their historical background, followed by a description of their associated methodological differences that may be responsible for the difference in the findings. We then present the results of a meta-analytic review of the literature, informed by these procedural differences, that brings order and regularity to the findings, and conclude with practical implications.

Behaviorist Approaches

Rewards are consequences that strengthen the performance on which they are contingent. Evolution provided people with a strong motivation to pursue stimuli that enhance chances of survival. Humans, with their strong intellectual and socializing

capacities, are attracted to many acquired rewards in addition to biologically advantageous satisfiers. These include money and symbolic rewards such as prizes. Rewards also include information that is interesting in its own right, such as news about sports or politics, or information that serves as a means to an end. Some rewards also meet socio-emotional needs as in expressions of approval, esteem, or caring.

A long held view of motivation, embodied in Jeremy Bentham's psychological hedonism, emphasizes the importance of reward as a basis for human action. Bentham stated that "Nature has placed mankind under the governance of two sovereign masters, *pain* and *pleasure*." The behaviorists showed the power of reward to influence many aspects of human performance. So it seems natural to suppose that creativity, as with other human activities, can be enhanced by reward. Yet, creativity is different from behaviors or activities that are readily identifiable and occur frequently and therefore can be easily rewarded. By its nature, creativity involves the unusual. Sometimes a creative problem or goal has multiple useful solutions, as in generating advertising slogans for an airline. Sometimes only a single solution is correct as in the historic discovery of the structure of humans' DNA. But in either case, because the creative response is not in the individual's prediscovery repertoire, behaviorist approaches offer limited information concerning the processes used to generate such behavior.

In the past, behaviorists have tried to deal with this issue by stressing the importance of trial and error in creative performance. In this view, Kohler's apes' insights into using sticks or stacking boxes to retrieve bananas 'at first sight' were actually the result of previous kinds of unnoticed experience. Similarly, humans generally do not come to creative insights out of the blue, as has often been claimed by famous individuals to demonstrate their own brilliance, but as part of a considerable number of reconsiderations of facts and information obtained from false leads and premature solutions. The small gains in understanding acquired along the way to creative solutions and the social approval for perseverance at creative attempts may encourage the individual toward a greater contribution. For example, James D. Watson and Francis Crick, the discoverers of the double helix molecular structure of human DNA, were encouraged by many small successes along the way to their discovery. Those who study the *repeated* reward to enhance creative responses (e.g., novel uses for common objects), rather than a *promised reward* for a single final highly creative product, do so because they are interested in the cumulative motivational effects of reward.

But Watson and Crick did not simply undergo trial and error, although this was part of it. They engaged in complex directed cognitive processing. What role did reward play? We think Watson may have had a keen insight here. He stated that the anticipation of the Nobel Prize kept him highly focused on the task at hand and motivated to do the hard work despite

his strong inclination to putting all aside for a good time. And, we suggest, the information associated with solving parts of the puzzle along the way served as a secondary reward.

Watson liked science for its own sake but wanted to be a famous scientist more than a practicing scientist, and he stopped actively carrying out research soon after receiving the prize in order to direct the science of others as an administrator for the rest of his career. As in this example, reward can have a powerful effect on creativity. Admittedly, these examples tell us primarily about how rewards can intensify and direct individuals' efforts and tell us relatively little about the complex cognitive processes that underlie creativity. Still, we will see a very effective formula for enhancing creativity: provide what the individual wants, contingent on creativity, and make this creativity contingency clear.

Behaviorist approaches maintain that reward will increase creativity so long as the reward is valued by the recipient and the nature of the contingency can be readily discriminated. Thus, in most studies of creativity the reward is based on repeated creative performance, and this contingency is communicated to participants by verbal instructions. This is deemed necessary because participants who are simply told they will receive a reward may not receive enough experience with the reward contingency to understand the reward depends on creativity and thus would fail to display novel performance. For example, if a child is asked to state uses for common objects and is rewarded for every uncommon use, the child has a low base level of providing uncommon uses and may be very slow to discriminate the dependence of reward on creativity. Thus, the typical behaviorist situation involves an experimental condition in which the nature of the creative performance is defined by instructions and the individual is repeatedly rewarded for a creative response. A control group is included with no reward and no mention of creativity.

The results of these studies have been impressive. Decades ago, a review of 20 such studies by Andrew Winston and Joanne Baker concluded that reward can be used to increase divergent thinking. Unfortunately, the findings reviewed by Winston and Baker confounded the instructions to be creative with the reward for being creative. Perhaps the simple instruction to be creative was responsible for the findings.

Romanticist Approaches

Another philosophical tradition, romanticism, equates creativity with freedom, and views reward as a kind of constraint on freedom that discourages creativity. This view can be traced to the early renaissance in the Italian city states and was associated with such subsequent popularizers as Jean Jacques Rousseau in France, and the American transcendentalists Emerson and Thoreau. The romanticists saw the excesses of early industrialization as producing emptiness in the lives of working people. The romanticists embraced sensuality and nature, and rejected the enlightenment's dependence on reason in place of intuition and feeling. In modern guise, romanticism rejects constraints on freedom as antithetical to creativity. We hasten to add that we are using the term *romanticism* in the historical and philosophical sense and not with the alternative meaning associated with a lack of clear and rational thought. Specifically, some researchers

have viewed reward as representative of control, emblematic of the kind of control represented in the excesses of the factory system, against which the romanticists rebelled.

Those contemporary approaches hewing to this approach, such as Teresa Amabile's early views of creativity and Edward Deci and Richard Ryan's analyses of intrinsic interest, place reward in the same category as constraints on performance such as time restrictions and limitations on how one is allowed to carry out an assigned task. Reward is assumed to be experienced as a loss of self-determination, with a lessened interest in the task for its own sake (intrinsic interest), a greater focus on the narrow requirements necessary to obtain the reward, and a necessary decrease in creativity. This view is understandable. Many people are forced to take jobs they abhor because they have low skills and must do so because of the pay. Others may possess considerable skills and talents and put them to use in jobs they dislike because the jobs require little effort or because the pay is high. In these situations pay seems constraining. Moreover, as Amabile suggests, a focus on rewards may limit attention toward what it takes to obtain the reward to the detriment of attention to novel information that is useful for creativity. Indeed, James Watson, in his search for the DNA molecular composition declined to attend lectures that were not directly related to his quest, and this narrowness might have slowed him down had he chosen to pursue additional research problems.

Common Ground

As we have seen, the behaviorist approach was flawed methodologically by the confound between the use of reward and instructions that told recipients that creativity was expected of them. Thus, most of the evidence seems to favor the romanticist view holding that reward decreases creativity. And yet the argument against rewards as a source of creativity seems too sweeping. Is it actually common for individuals to feel constrained by rewards, reducing their feelings of freedom and self-determination and narrowing their attention span? Further, can such a powerful motivator as reward be ineffective for this one category of human behavior? Three decades ago the first author began his research on creativity after being approached by a student, Michael Selbst, who had heard about the decremental effects of reward on creativity and wanted to do research with me on the topic. As a newcomer to the field who had no commitment to either camp in the controversy over whether reward decreases or increases creativity, I was startled by two seeming discontinuities in the empirical literature.

First, most of the studies reporting that reward increased creativity were carried out by behaviorists who made reward contingent on repeated creative performance. In contrast, most of the studies reporting that reward reduced creativity involved giving a promise of reward for unspecified performance. Was it possible that whether reward increases or decreases creativity depends on whether recipients understand that the reward depends on creative performance rather than on conventional performance? Second, there were very few studies that reported whether reward reduced perceived self-determination, a key mechanism that Deci and Ryan suggested was responsible for lessening the effects of reward on intrinsic interest. Is it really the case that reward reduces perceived self-determination?

In a series of studies, my colleagues and I found that when the relationship between reward and creativity was made clear to participants, creativity increased. This clarity could be achieved either by instructions or by a preliminary task in which instructions for creativity were used. For example, Eisenberger and Linda Rhoades asked college students to generate creative story titles, with or without the promise of reward. Students promised reward for creativity produced story titles that were rated as more creative by judges than did students given the same instructions without the promise of reward.

Because people are rewarded more often in everyday life for conventional rather than creative performance, individuals offered a reward for nonspecific performance, as in the typical romanticist study, may believe that conventional performance is the most effective way to obtain the reward and respond accordingly. A study by Amabile is telling. She found that offering children a reward for constructing a collage, without an indication that creativity was expected, produced less creativity than the same instructions without the offer of reward. Yet, the children offered the reward constructed collages that were better planned and organized and more representational than those of children in the control group. Lacking guidance concerning the type of performance that was desirable, the children may have attempted to obtain the reward by the conventional performance that had been rewarded in the past.

The behaviorists appear to produce creativity by making reward contingent on creative performance. The romanticists appear to reduce creativity by being vague about the nature of desirable performance. However, it is also the case that individuals generalize their experience from similar situations so that, as the first author has found in many studies, reward for creativity in one task with clear directions increases creativity in subsequent tasks with vague directions.

In a study and subsequent meta-analytic review of the literature, the first author and his colleagues also found that, rather than reducing perceived freedom and self-determination, reward increased perceived self-determination. Compared to a control group simply given task instructions, a rewarded group experienced increased self-determination. Eisenberger and Linda Shanock explained these findings as follows.

The use of reward in everyday life conveys not social control but increased self-determination. People understand that reward's use in everyday life is utilitarian, involving the reward giver's lack of control over the potential reward recipient; those offering the reward believe that favorable consequences are needed to obtain the cooperation of the person being asked to carry out the task. Specifically, the promise or repeated use of reward communicates that (a) the individual or group giving the reward lacks control over the performance of the potential reward recipient, and (b) the recipient can, if desired, decline the reward and not act as directed.

We now summarize the conclusions of a quantitative review, combining the findings of similar studies so that an overall effect size can be determined for each type of reward procedure.

Meta-Analytic Review of the Literature

Although a diversity of study designs has the potential of furthering knowledge about rewards and creativity, it also

makes it difficult to make sense of the findings. The literature on rewards and creativity is highly diverse in terms of where and how rewards and creativity have been studied and who and what has been studied. Researchers have examined the effects of rewards on the creative performance of people of various ages (children, college students, adults). Additionally, research has been conducted with different types of rewards (praise, activities, money, prizes), with different types of creative tasks (creative writing, collage-making, divergent thinking tasks, in-basket tasks), in different settings (laboratories, schools, workplaces), with a variety of research designs (experimental and non-experimental, within- and between-subject), and with different reward schemes (before, during, and after performing a task).

Kristin Byron and Shalini Khazanchi's recent meta-analysis of more than 60 studies examining rewards' effects on creativity in humans serves to enlighten this debate by using this powerful statistical technique to average the findings separately by category. Although there is no simple answer to the question "Do rewards help or hinder creativity?," there are some generalizations – and some finer points – that can be derived from this meta-analysis regarding rewards' effect on creativity. In fact, these results generalize across different types of creative tasks (e.g., divergent thinking tests and the creation of creative products such as collages) and different types of studies (e.g., experimental studies in laboratory and other settings and nonexperimental field studies conducted in work organizations). **Table 1** summarizes the results of the meta-analysis that are reviewed below.

In general, the results of the meta-analysis found that rewards increase creative performance when people expect that the rewards are contingent on *creative* rather than routine performance. Clarifying a contingency on creative performance can be accomplished through a variety of means. The two most straightforward and direct ways are to simply specify that rewards are only for creative responses or to reward creative

Table 1 Summary of meta-analytic results examining the rewards-creativity relationship

| <i>Factors that Increase, Decrease or Have No Effect on creative performance</i> | |
|--|---|
| Increase | <ul style="list-style-type: none"> ● Creativity-contingent rewards produce greater creativity than performance-contingent rewards which, in turn, produce greater creativity than participation-contingent rewards. ● Creativity is increased by the value, number, proximity or choice of rewards. ● Adults are more responsive to rewards than are children. ● Rewards influence the number of creative ideas more than the originality of creative ideas. ● Rewards generate greater creativity on complex tasks with diminishing returns as the task becomes highly complex. |
| Decrease | <ul style="list-style-type: none"> ● Participation and completion-contingent rewards decrease creativity. |
| Have No Effect | <ul style="list-style-type: none"> ● Simple competition fails to increase creativity. ● No one reward type (e.g., praise, money, desirable activities) has been found to be generally more effective than another at generating creativity. |

responses thereby creating an expectation that future rewards are also contingent on creativity. Results of many studies suggest that people are more creative when they are told that they have to be creative to receive a reward or when they have received rewards in the past for creative (rather than noncreative) responses. Other methods are also effective at conveying to people that creativity is expected, desirable, and will be rewarded. For example, many of the studies that successfully motivated creativity did so by providing instruction on how to be creative or providing a model of creative work – both of which probably convey to those who are offered rewards that creative performance is likely to be rewarded.

Several other factors seem to improve the likelihood that rewards can help people to be more creative. First, more rewards are better than fewer rewards. People who were both praised and offered other types of rewards for being creative were more creative than people only given praise or only offered other types of rewards. Second, when monetary rewards are contingent on creativity, the size of the reward also appears to matter. In the studies meta-analyzed, people offered more money for being creative were more creative than were those offered smaller monetary rewards. Third, creativity-contingent rewards are more effective at motivating creativity from adults than from children. Lastly, when rewards are contingent on creativity, having the reward in sight appears to be better at motivating creativity than does having the reward out of sight. However, this finding may be truer for adults than for children – who may be more easily distracted by having rewards in sight.

The existing evidence suggests that creativity-contingent rewards motivate people to be more creative. However, the results of the meta-analysis add a few caveats to that statement. First, creativity-contingent rewards are effective at motivating both different and highly original responses, although they are more effective at motivating people to generate more responses (e.g., ideas, artistic forms) than they are at motivating people to produce highly original responses. Second, the results suggest that rewards are less effective at producing creative responses on highly complex creative tasks. Rewards are increasingly effective at motivating creative performance on tasks of greater complexity but only to a point. On highly complex tasks, rewards are still effective – though less so – at motivating creativity, perhaps because prior skill level or aptitude constrains any motivating effect of reward.

In addition to pointing out factors that may increase creativity, the results of the meta-analysis also point out factors that *decrease* the likelihood that rewards will help people to be more creative. Namely, rewards are less effective at motivating creativity when people do not expect or are unlikely to expect that the rewards are contingent on creative performance. When rewards are offered for completing a task or participating in a task, rewards seem to have no effect on creativity. For example, Teresa Amabile, Beth Hennessey, and Barbara Grossman found that children who received a reward (being able to play with a Polaroid camera) in exchange for later participating in a story-telling task subsequently told less creative stories. In contrast, those who did not receive a reward (playing with the camera was not linked to their participation in the story-telling task) told more creative stories.

Many studies that have sought to examine the effects of rewards on creativity have used these types of rewards – to an

unsurprising effect. When people are told that rewards are for merely completing or participating in a task or when people receive prior rewards for output irrespective of its creativity, creativity tends to decrease or, at the least, not increase. With this type of reward, referred to as completion-contingent rewards, rewards appear unable to motivate people to be more creative. Alternately, when rewards are offered for performance but not explicitly *creative* performance, they are less effective at motivating creativity. With this type of reward, referred to as performance-contingent rewards, rewards motivate people to be more creative but less so than for creativity-contingent rewards.

As discussed above, creativity-contingent rewards increase creativity – and, while some factors serve to enhance or mitigate this effect, other factors seem to have no effect at all. Namely, what type of reward is offered and whether the reward is offered competitively or noncompetitively do not seem to significantly affect the relationship between rewards and creativity. According to the results of the meta-analysis, whether people are offered praise, money, desirable activities, or prizes to be creative does not alter rewards' effect on creativity.

Clearly, much research has sought to illuminate the relationship between rewards and creativity. Despite this sizable literature, there are some questions that remain unexplored. First, many scholars have suggested that there may be important individual differences that may account for the mixed results found in the literature. Individual differences that have been put forth as potentially important include intelligence, thinking style, creative aptitude, sex, and others. For example, Linda O'Hara and Robert Sternberg found that, when they were not given any special instructions about how to complete a potentially creative task, people who tend to play with their own ideas were more creative than were people who tend to analyze and evaluate ideas. It may be that rewards similarly interact with thinking style to determine creative performance. Rewards may increase creative performance of those who tend to analyze and evaluate ideas because they are less inclined to think creatively in the absence of a specific motivator. Conversely, those who tend to play with their own ideas may be less affected by rewards because they are already inclined to think creatively.

Second, many studies outside the creativity literature have examined the relative effects of different reinforcement schedules on individuals' motivation and subsequent performance. Although there are few studies in the creativity literature that have examined reinforcement schedules, it seems likely that the findings regarding motivation and performance on noncreative tasks transfer to creative ones. Specifically, rewards that are administered on a variable reinforcement schedule, such that individuals are rewarded intermittently for creative performance, are likely to be more motivating than are rewards that are administered on a continuous reinforcement schedule, such that individuals are rewarded every time or at regular intervals for creative performance. Reinforcement schedules may also help determine how long-lasting the effect of rewards is. Unfortunately, existing research does not allow for firm conclusions about the extent to which rewards administered under different reinforcement schedules may affect performance and persistence on creative tasks.

Additionally, how rewards are administered and distributed for creative output probably determines persistence. Being

creative often results in false starts or ideas or products in need of further refinement. Smaller rewards administered during the creative process may help to increase persistence toward more novel and appropriate products or ideas. Further research may examine how rewards can be used to increase experimentation and risk-taking – both of which are essential to the creative process.

In summary, the bulk of the evidence suggests that rewards can increase creativity. To do so, the rewards must be clearly contingent on creative – rather than routine – performance. When people are not clear that they should be original and innovative, rewards are less effective at increasing creativity. Much insight can be derived from existing studies on rewards and creativity, although more work needs to be done to further what is known about how and when rewards affect creativity.

Promoting Creativity at Work and School

Many educators wish to increase their students' creativity, many managers wish to increase their employees' creativity, and, as a society, we often wish to increase the creativity of the artists, musicians, and writers whose work we enjoy. Fortunately, research on rewards and creativity offers insights about how to achieve these goals. Below, some of the primary lessons gleaned from research on rewards and creativity are presented.

First, be explicit about expectations. For people to be creative, they must know that creative work is expected. Without a clearly stated expectancy regarding creativity, people are likely to assume that other aspects of performance such as technical goodness or speed are more valued. Therefore, to promote creativity at work and school, educators and managers should explicitly state that creative work is desired and valued. The key issue to improving the effectiveness of rewards is to make it clear that receiving the reward is contingent on creative performance.

Second, offer training and modeling to increase creative skills. When people receive training or modeling of creative behavior, they learn how to be more creative. In addition to learning new skills, training and modeling also help to clarify expectations about what is valued. As stated above, people are more likely to be creative when they understand that creativity is expected and considered desirable. When people are trained to be more creative or are provided with a role model who exhibits creative behavior, then they come to understand that they should also seek to be creative.

Third, different types of rewards may help to increase creativity. Praise, privileges, money, and prizes have all been found to successfully motivate creativity. It is, however, always wise to offer people rewards that they personally value, as rewards that are considered unattractive are unlikely to be motivating. Further, although the type of reward does not seem to matter in general, educators and managers may consider offering multiple rewards. It may be that offering more rewards increases perceived choice and improves the likelihood that those being offered the reward will find at least one of the rewards offered attractive.

Fourth, make sure rewards are distributed equitably. What is equitable? People probably make two primary considerations when determining the fairness of a reward in response to their creative output. First, they probably consider the extent

to which their rewards are fair in comparison to those rewards received by others. For this reason, people who are more creative should receive greater rewards. Second, individuals probably consider the extent to which their rewards are fair in comparison to the value of their creative work. For this reason, people who produce more valuable creative responses should receive greater reward. For example, if an employee finds a creative solution that saves his or her employer millions of dollars, then the employee probably expects a greater reward than if the employee had developed a creative solution that did not prove as valuable. This positive reinforcement compensates employees, communicates gratitude to employees for their efforts, and sends a message regarding expectations to other employees. It seems likely that employees who are *not* rewarded for being creative are likely to feel that they are not being treated fairly and may subsequently withdraw from being creative at work.

Lastly, as mentioned above, rewards should also be offered for experimentation and risk-taking – even when individuals' attempts result in failure. Managers and educators should realize that much of being creative results in false starts. It is by taking risks, experimenting with new ideas of uncertain value, and forging into uncharted territory that people may eventually produce the most creative ideas, products and processes. For this reason, rewarding only creative ends – and failing to reward creative effort – is unlikely to sustain creative behavior. Managers and educators should thus tolerate mistakes and view them as a necessary part of the creative process.

Conclusion

The issue of whether reward increases or decreases creativity has been marked by considerable controversy, with substantial data marshaled for both views. In the present review we have considered how the behaviorist view of human nature has led to a predisposition to view reward as increasing creativity while the romanticist view has promoted the view that reward decreases creativity. Our analysis of the methodological differences in studies reporting these two kinds of outcomes and the results of a meta-analytic review begin to bring clarity and order to the research literature on rewards and creativity.

Our major conclusions are that reward for creativity increases creativity when recipients clearly discriminate the necessary contingency. Rewards for high performance, not specifically creative performance, increases creativity to a lesser extent. In contrast, noncontingent reward generally reduces creativity. We need more and better theory concerning why and how these effects take place rather than a continuation of the ongoing disagreement concerning whether reward generally increase or decreases creativity.

See also: Behavioral Approaches to Creativity; Risk-Taking; Teaching Creativity.

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<http://www.uh.edu/eisenberger> – Dr Robert Eisenberger homepage.