

## **Enhancing employee creativity: Effects of choice, rewards and personality**

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Zhou, J., Oldham, G., Chuang\*, A., & Hsu, R. (2022). Enhancing employee creativity: Effects of choice, rewards and personality. *Journal of Applied Psychology*, 107, 503-513.  
<https://doi.org/10.1037/apl0000900>

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### **Abstract:**

We conducted a quasi-experimental field study of an organization-wide suggestion program and a follow-up laboratory experiment to examine the effects of choice of rewards on employee creativity. As hypothesized, the results of both studies showed that choice had positive, significant effects on the number of creative ideas employees generated and the creativity level of those ideas. Results of the quasi-experiment also showed that creative self-efficacy (CSE) mediated the effects of reward choice. Two general categories of rewards were examined in our studies—those that directly benefited the idea generator (Self) and those that directly benefited charities (Other). We explored the effects of these reward categories on employee creativity and whether employee creative personality interacted with the reward categories to affect employee creativity. Results showed that the reward categories did not have a significant impact on employee creativity. However, both studies demonstrated that in the Other reward condition, employees with a creative personality produced ideas higher in creativity than those with a less creative personality. The quasi-experiment also showed that CSE mediated the effects of the Reward × Creative Personality interaction. We discussed the implications of these results for the future research and practice.

**Keywords:** field experiment | creativity | choice | reward and incentive systems | personality and individual differences

### **Article:**

Substantial evidence suggests that employees' creative ideas can contribute to the organization's growth, effectiveness, and survival (Damanpour & Schneider, 2006 ; Tellis et al., 2009). When employees generate ideas that are novel and useful, they provide the organization with raw material that might be implemented in the organization or in the marketplace (Oldham & Baer, 2012). These implemented ideas can enhance the organization's ability to adjust to shifting market conditions, respond to opportunities and, thereby, to adapt, grow and compete (Gong et al., 2013 ; Nonaka, 1991).

Given the significance of employee creativity, it is not surprising that organizations have used numerous strategies to encourage idea generation (Grant, 2016). Among the most frequently used of these strategies are suggestion programs that provide employees with financial and other tangible rewards for generating creative ideas (van Dijk & van den Ende, 2002). The widespread

use of rewards in suggestion programs suggests that organizations consider offering rewards as a potentially powerful way to promote employee creativity. Unfortunately, although several studies have examined the effects of various reward features on individuals' creativity (see Malik & Butt, 2017), it is not yet clear how rewards should be offered in these programs to increase the chances that they have positive effects on employee creativity.

The present investigation addresses this issue by examining the effects of offering employees a choice of rewards included in a suggestion program on their creativity. Drawing on insights from early research and theory (Chua & Iyengar, 2008), we first investigate the possibility that offering employees a choice of rewards enhances the creativity of their ideas versus offering no choice. The few previous studies that have focused on the effects of reward choice on individuals' creativity have been conducted in laboratory settings and have yielded generally inconclusive results (Byron & Khazanchi, 2012 ; Patall et al., 2008). Our investigation contributes to this literature by being the first to systematically examine the effects of reward choice in a field setting—an organization-wide suggestion program. Specifically, we examine the extent to which offering employees a choice of rewards boosts the number and creativity level of ideas they submit to a suggestion program.

Second, to better understand the effects of reward choice, we examine a psychological mechanism that might mediate the effects of choice on employee creativity: creative self-efficacy (CSE). Identifying the psychological mechanism helps advance our understanding of the theoretical reasons that explain the observed effects of reward choice. Drawing on Social Cognitive Theory (Bandura, 1997), our research contributes to the literature by focusing on CSE, which has been shown to be effective in mediating the effects of various personal and contextual factors on creativity (see Liu et al., 2016 ; Tierney & Farmer, 2002).

In addition to our primary focus on the effects of reward choice on employee creativity, our study explores three additional research questions. First, in the context of examining the impact of reward choice, we examine the relative effects of two general categories of rewards—those that directly benefit the idea generator (Self) and those that directly benefit charities (Other)—on employee creativity. Most prior studies of rewards and creativity focused on financial rewards intended to directly benefit the individual who is engaging in a task (Yoon et al., 2015). We know little about the effects of rewards offered to the idea generator that benefit charitable organizations. This is a serious issue because rewards that benefit those in need might be regarded as more meaningful than rewards that benefit the employee himself or herself (Dunn et al., 2008 ; Nussbaum, 1996 , 2001). Our research advances our understanding in this regard.

Second, we explore the possibility that individuals' responses to the rewards described above vary as a function of their personal characteristics. Although theorists have posited that individuals with specific attributes exhibit more creative responses to certain reward types than those lower on these attributes (e.g., Baer et al., 2003 ; Malik et al., 2015), few studies have investigated this possibility (Byron & Khazanchi, 2012). Our study contributes to the literature by exploring whether employees with a creative personality (Gough, 1979) respond more positively to Other rewards than to Self rewards.

Finally, we explore whether employees' CSE mediates the Reward  $\times$  Creative Personality interaction on employee creativity. It has been rare for studies focusing on the interactive effects of rewards and personal characteristics on creativity to directly examine mediating mechanisms (Byron & Khazanchi, 2012). Our research contributes to the literature by exploring the effectiveness of CSE in explaining the effects of the Reward  $\times$  Creative Personality interaction.

## Choice and Employee Creativity

Creativity involves individuals producing ideas about products, practices, procedures, or services that are novel and potentially useful to the organization (Oldham & Cummings, 1996). Consistent with previous research and theory (e.g., Gibbs et al., 2017 ; Ohly et al., 2006 ; Reiter-Palmon & Illies, 2004 ; Shalley & Oldham, 1997 ; Torrance, 1988 ; Wilhelm et al., 2019), the present investigation includes measures of two creativity indicators: the total number of ideas employees submit to the suggestion program and the overall creativity level of those ideas. Commentators have long argued that large numbers of creative ideas and those that are highly creative have the potential to add value to the organization and should be encouraged (e.g., Kishore, 2013 ; Robinson & Schroeder, 2005).

Offering individuals a choice of rewards or tasks has been suggested as an effective way to enhance their creativity (see Patall et al., 2008). A few prior laboratory studies have shown that those who are given a choice of rewards (e.g., \$10 vs. a quart of liquor) exhibit higher creativity than those not given a choice (see Byron & Khazanchi, 2012). However, as mentioned earlier, no previous study has examined the effects of reward choice in the context of an organization-wide suggestion program. We address this issue by contrasting the effects of reward choice versus no-choice on the number and creativity level of ideas employees submit to a suggestion program.

CSE refers to employees' beliefs about whether they can generate creative ideas in the context that they are in (Tierney & Farmer, 2002). According to Social Cognitive Theory, self-efficacy beliefs represent individuals' assessments of their capabilities and control over a specific type of task or domain. Such beliefs are influenced by the context and, once high levels of such beliefs are formed, they will serve as the psychological mechanism that facilitates individuals' exercising their agency in subsequent behaviors (Bandura, 2012). Contextual cues can influence CSE through their symbolic meanings and informational effects (e.g., Schunk, 1984). Reward allocation is one of the most important decisions for organizations, and hence, it has typically been controlled by managers (Milkovich & Newman, 2008). When choice and no-choice conditions are present, employees who have the opportunity to choose a reward for generating creative ideas are likely to assess this contextual cue as they are entrusted with this important decision because they have the capabilities to be creative. In other words, relative to having no choice, having a choice may cue employees that they are capable of being creative, or the organization would not have entrusted them with the freedom to choose a reward for generating creative ideas. Furthermore, self-efficacy is at the core of human agency, which reflects individuals' fundamental desire to exercise control over their environment (e.g., Bandura, 2006). Having choice is consistent with the fundamental desire of agency. Thus, it should awaken and bolster self-efficacy beliefs. All in all, then, having a choice may lead employees to believe that they are indeed capable of being creative, thereby experiencing elevated CSE.

Creatively, self-efficacious employees are more likely to strive to develop creative ideas despite the difficulty of doing so, to exert effort at adhering to the process of challenging established routines, and to adopt nonconforming views and behaviors (Tierney & Farmer, 2004). Moreover, those with high CSE should be resilient and persevere in the creative process even when faced with setbacks (Liu et al., 2016). Taken together, having a choice of rewards should boost employees' beliefs in their own capabilities of generating creative ideas, which should result in the generation of many ideas and ideas that are more creative. Thus,

*Hypothesis 1:* Employees who have a choice of rewards will produce (a) more ideas and (b) ideas that are more creative than those who do not have a choice.

*Hypothesis 2:* Choice will exert an indirect effect on creativity via CSE, such that compared with employees who do not have a choice of rewards, those who have a choice will produce (a) more ideas and (b) ideas that are more creative, and CSE will mediate these effects.

### **Exploratory Questions About Main and Interactive Effects of Reward Types**

In an exploratory vein, we also compare and contrast the effects of Self rewards that benefit the idea generator versus Other rewards that benefit charities. Little previous work has theorized the relative effects of these two reward types on employee creativity, making it premature to advance formal hypotheses. Prior research offers suggestive evidence, showing that those who spent money on charities experienced higher levels of happiness than those who spent money on themselves (e.g., Aknin et al., 2013 ; Anik et al., 2013 ; Dunn et al., 2008 ). Hence, employees may regard Other rewards as more attractive and meaningful than Self rewards, thereby exerting more effort and summoning more capabilities when generating creative ideas.

*Research Question 1:* Will employees in an Other reward condition produce (a) more ideas and (b) ideas that are more creative than those in a Self reward condition?

Next, we explore the possibility that creative personality ( Gough, 1979 ) moderates the effects of the rewards on the number and creativity level of employees' ideas. Although no prior study has examined the interaction of creative personality and the rewards included in our study, research has shown that individuals' creative personality interacts with contextual conditions to influence their creative responses ( Madjar et al., 2002 ; Zhou, 2003 ). Individuals with a creative personality are unconventional, attracted to complexity, and have broad interests ( Barron & Harrington, 1981 ; Martindale, 1989 ). They tend to engage in divergent thinking ( McCrae, 1987 ), which has been associated with a preference for exhibiting prosocial behaviors, such as donating money ( Xu & Mehta, 2015 ). Thus, those with a creative personality may find Other rewards especially attractive and respond more positively to them than to Self rewards.

*Research Question 2:* Will rewards and creative personality interact such that employees with a creative personality in an Other reward condition produce (a) more ideas and (b) ideas that are more creative than those in a Self reward condition?

Finally, we explore the possibility that CSE mediates the effects of the Reward  $\times$  Creative Personality interaction on employee creativity. Because Other rewards should be highly valued by those with a creative personality, it is possible that the opportunity to obtain these rewards invokes cognitive awakening and a sense of being capable. The cognitive awakening and the sense of being capable should propel employees to exert extra effort when generating creative ideas. Therefore, for employees with a creative personality, their natural inclinations coupled with the attractive Other reward should make such an effort particularly fruitful in mustering their creative capabilities, thereby boosting their creativity. Because no previous theory or research has addressed this possibility, we pose a research question rather than a hypothesis.

*Research Question 3: Will CSE mediate the effects of the Reward × Creative Personality interaction on the (a) number and (b) creativity level of employees' ideas?*

## **Study 1**

### Organization and Participants

We designed a quasi-experiment using telemarketers at a television shopping Call Center in Taiwan. Before our intervention, the Center had in place a suggestion program designed to encourage the telemarketers to submit creative ideas to improve the organization. Employees who submitted ideas rated as the most valuable were rewarded with trophies. We invited all telemarketers (N = 383) to participate in our study and 345 (90.1%) responded to both of our surveys, resulting in our final usable sample. Eighty percent of the sample were female, the mean age was 32.4 years, the mean tenure was 1.9 years, and 50.1% had a college degree.

### Procedures

The quasi-experiment spanned several months and included two announcements, two interventions (choice and rewards conditions), and surveys at Time 1 (T1) and Time 2 (T2). Between July 1 and 31, 2015, the Center suspended their original suggestion program, allowing us to examine the effects of reward choice and reward types during August 2015. In June 2015, we introduced the study and told participants that creative ideas were those that were both original and useful. During July 21–28, 2015, we distributed a T1 survey to assess participants' demographics, creative personality, and CSE.

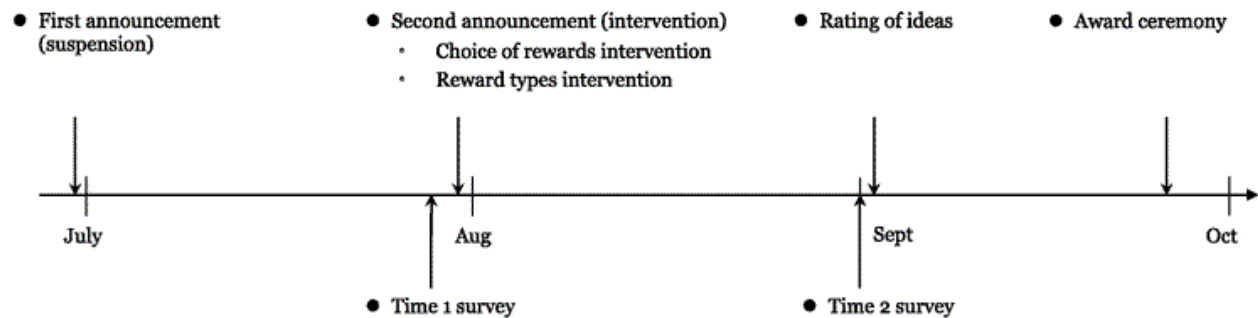
On July 29, 2015, we told participants that a new reward program would be in place during August 2015, experts would rate the ideas submitted to an online system in August, the top 20% most creative ideas would receive rewards, and they were eligible to receive multiple rewards should they have more than one idea among the top 20%. Participants were then randomly assigned to a choice or a no-choice condition. To check if the manipulations were successful, we administered a T2 survey between September 1 and 7, 2015 that included manipulation checks. In the survey, we also asked the participants to recollect and evaluate their CSE in August when the reward program was in place. For the T1 and T2 surveys, participants were instructed to drop the completed surveys into a collection box, which we would collect. Our raters evaluated ideas at the end of August and rewards were distributed at a ceremony in late September. Figure 1 shows a time line of the field experiment.

### *Rewards and Choice*

To understand reward preferences, we first interviewed Center employees. Using this information, we and the Center's HR team designed four rewards that were of comparable value to employees: Self-individual financial (the author of a winning idea would receive \$2,500 New Taiwan Dollars [NTD]), Self-unit financial (the author of a winning idea would receive \$2,500 NTD that was to be shared with members of his or her work unit), Self-discretionary time (the author of a winning idea would obtain priority to select the days off he or she preferred in the following 2 months), and Other-charity financial (the organization would donate \$2,500 NTD to a charity organization selected by the winning author).

Those in the choice condition (N = 179) were provided a sheet of paper with descriptions of all four rewards and were asked to select one. To counterbalance the order of the rewards, we produced 24 versions of the order for distribution. Ninety-three chose the Self-individual financial, 22 the Self-unit, 21 the Self-discretionary, and 43 the Other-charity. Those in the no-choice condition (N = 166) were randomly assigned to one of the four rewards: 44 to the Self-individual, 42 the Self-unit, 38 the Self-discretionary, and 42 to the Other-charity.

**Figure 1** *Time line for the Quasi-Experiment and Surveys (Study 1)*



## Measures

### *Employee Creativity*

Among the employees who completed our surveys, 68 ideas were submitted in July and 144 in August. To create measures of the number of creative ideas, we summed the number of ideas each participant submitted during July (range = 0–6) and the number in August (range = 0–10). To create measures of the creativity level of ideas, four raters (two researchers and two managers) independently rated each idea submitted in July and in August. Raters were not informed of the names of those who submitted the ideas and rated, separately, the extent to which each idea was original and useful with ideas randomly ordered for each rater. Ratings were made on a 7-point Likert scale ranging from 0 (not original at all; not useful at all) to 6 (extremely original; extremely useful). We calculated interrater reliabilities using an intraclass correlation approach and obtained satisfactory reliabilities for the July and August measures ( $r_{wg} = .80, .78$  for originality and  $.81, .83$  for usefulness).

Following the approach used in prior studies (e.g., Lu et al., 2019 ; Zhou & Oldham, 2001 ), we calculated overall creativity scores for each participant by multiplying scores on the originality and usefulness dimensions. If an employee submitted multiple ideas, we took the average score of that employee’s ideas to describe his or her creativity. If an employee did not submit an idea for either July or August, we assigned that employee a score of 0 for the month.

### *Choice*

Those in the choice condition were coded 1; those in the no-choice were coded 0.

### *Rewards*

Results of an ANCOVA showed that there were no significant differences in the August creativity level of ideas ( $F_{2, 260} = 64.46, p > .05$ ) among the three Self rewards (Self-individual, Self-unit, and Self-discretionary) after age, gender, and July creativity were controlled. Therefore, we collapsed the three categories and created a rewards dummy variable (0 = Self ; 1 = Other).

### *Creative Self-Efficacy*

At T1 and T2, we adapted Tierney and Farmer's (2002) scale to measure employees' CSE. The response scale ranged from 1 (strongly disagree) to 7 (strongly agree). Cronbach's alphas were .90 at both T1 and T2.

### *Creative Personality*

This was assessed at T1 using the Creative Personality Scale (CPS; Gough, 1979). Participants placed a check mark next to each adjective that they thought described them (Oldham & Cummings, 1996). Each checked "creative" adjective was assigned a value of +1 and each checked "less creative" adjective a value of -1. We summed the values to form a CPS index and used a weighted composite technique to calculate the reliability (.65).

### *Manipulation Checks*

For choice, participants completed four questions in the T2 survey. We used a Likert scale that ranged from 1 (strongly disagree) to 7 (strongly agree). A sample question is as follows: "The research team gave me an opportunity to choose the incentive reward I desired." All items were averaged to form a choice index ( $\alpha = .89$ ). For the reward check, participants were asked to recall their reward condition and to check the one which fit that condition from the descriptions of all four rewards in the T2 survey.

### *Controls*

We controlled for age (years), gender (0 = female ; 1 = male) (Baer et al., 2003 ; Madjar et al., 2002), and July number or creativity. Indirect effect analyses controlled T1 CSE.

## **Study 1: Results and Discussion**

### **Manipulation Checks and Hypothesis Tests**

The mean values of the manipulation check index for the choice (5.70) and no-choice (3.87) conditions were significantly different from one another ( $t = 12.27, p < .05$ ), indicating that the manipulation was successful. For the reward check, we compared the rewards that participants selected or were assigned with the rewards they reported in the T2 survey. A total of 91.4% of the participants accurately described their rewards.<sup>2</sup>

Table 1 shows the mean values, standard deviations (SDs), and correlations. Table 2 shows the mean values and SDs for number of ideas (August), the creativity level of ideas (August), and CSE (T2) by experimental conditions. We used quasimaximum likelihood Poisson

regression for all analyses involving the number of ideas. This analytic approach is an appropriate method to account for count data with large numbers of zeros (i.e., overdispersion; Blackburn, 2015 ; Gibbs et al., 2017). We used Ordinary Least Squares (OLS) regression for all analyses involving the creativity level of ideas. To estimate the confidence interval for each effect, we used bias-corrected and accelerated (BCa) bootstrap (Hayes & Preacher, 2014 ; Preacher & Hayes, 2008) with 3,000 resamples.

Hypothesis 1 predicted that employees who have a choice of rewards would produce (a) more ideas and (b) ideas that are more creative than those who do not have a choice. Table 3 shows significant effects of choice on the number and the creativity level of ideas. Table 2 shows that the mean values for the number and creativity level of ideas were higher in the choice (.54 and 2.08) than in the no-choice condition (.28 and 1.12), supporting Hypotheses 1a and 1b. Hypothesis 2 stated that reward choice would exert an indirect effect on (a) the number of ideas and (b) the creativity level of ideas via CSE. Results in Table 3 provide support for Hypotheses 2a and 2b.<sup>3</sup>

Research Question 1 asked if employees in the Other reward condition produced (a) more ideas and (b) ideas that are more creative than those in the Self reward condition. Results indicated that the effects of rewards on the number (90% BCa CI [-1.047, .126]) and creativity level of ideas (90% BCa CI [-1.268, .099]) were statistically nonsignificant. Thus, in general, employees did not respond differently to the Other and Self rewards included in the study. Research Questions 2 and 3 asked if rewards interacted with creative personality to predict the creativity indicators, and if CSE mediated these effects. Results revealed a nonsignificant effect of the Reward × CPS interaction on the number of ideas (90% BCa CI [-.075, .310]). However, results for creativity level were statistically significant (90% BCa CI [.090, .655]), indicating that rewards interacted with creative personality to predict the creativity of ideas. Conditional effects showed that for employees in the Other reward condition, the more creative the personality, the more creative their ideas (90% BCa CI [.101, .629]). The conditional effect was nonsignificant for those in the Self reward condition (90% BCa CI [-.134, .089]) (see Figure 2). Although the Reward × CPS interaction was statistically nonsignificant for number of ideas, Table 2 shows a consistent pattern of mean values for creativity level and number for the Reward × CPS conditions.

Finally, we investigated whether there was an indirect effect of the Reward × CPS interaction on the number and creativity level of ideas via CSE. Results showed significant effects for number (90% BCa CI [.001, .032]) and creativity level (90% BCa CI [.003, .144]), indicating that rewards interacted with creative personality to predict creativity via CSE.<sup>4</sup> The conditional indirect effects were significant for those in the Other reward condition (number, 90% BCa CI [.001, .037]; creativity, 90% BCa CI [.005, .152]), but nonsignificant for those in the Self reward condition (number, 90% BCa CI [-.009, .017]; creativity 90% BCa CI [-.026, .062]).

Our quasi-experiment did not allow us to segregate a portion of employees from the Call Center to serve as a control group. Therefore, it is not clear that those who had no choice or received no rewards were any less creative than those who had a choice or did receive rewards. Thus, we conducted a laboratory study to (a) test whether the choice and reward conditions had effects on creativity over and beyond a baseline control group and (b) replicate Study 1 results testing Hypothesis 1 and exploring Research Questions 1 and 2.

## **Study 2: Method**

## Participants, Experimental Design, Procedures, and Task

Eighty-two employees from 12 organizations in Taiwan agreed to participate in the study.<sup>5</sup> Seventy-two working students from the Continuing Education and Executive MBA programs at a university also agreed. The final sample included 154 individuals (55% female, average age 40.1 years, mean work tenure 14.4 years, and 92.2% had a college degree). We used a 2 (Choice and No-choice)  $\times$  3 (Self-individual financial, Self-unit financial, and Other-charity financial) + Control group design. Confidentiality was assured.

Participants were told that they were to generate creative ideas for a task. Instructions to participants were included in booklets.<sup>6</sup> Those in the reward conditions were told that researchers would select the top 20% most creative ideas and that the authors of those ideas would receive a reward, and they were eligible to receive multiple awards should they have more than one idea among the top 20%. Those in the Choice condition were provided descriptions of three rewards (discussed below) and were instructed to select the one they desired the most. Participants in the No-choice condition were presented with a description of a single reward. Those in the Control group were presented with the experimental task, and no reward or choice was mentioned. Participants were then presented the task that asked them to generate creative ideas regarding “How to fill the gap between what is taught at school and what is practiced in the real world.” They were told that creative ideas were original and useful, that they may take as much time as needed, suggest at least one idea, and write as many ideas as they could.<sup>7</sup>

### *Choice of Rewards*

We examined three rewards: *Self-individual financial* (the author of a winning idea would receive \$2,500 NTD), *Self-unit financial* (the author of a winning idea would receive \$2,500 NTD that was to be shared with members of his or her class group or work team),<sup>8</sup> and *Other-charity financial* (the research team would donate \$2,500 NTD to a charity organization selected by the winning author).<sup>9</sup> To counterbalance the order of the rewards, six versions of the order were generated for distribution. For Choice (N = 60), 16 chose Self-individual, 14 Self-unit, and 30 Other-charity. For No-choice (N = 64), 17 participants were randomly assigned to the Self-individual, 21 the Self-unit, and 26 the Other-charity. A total of 30 participants were randomly assigned to the control group.

## Measures

### *Creativity*

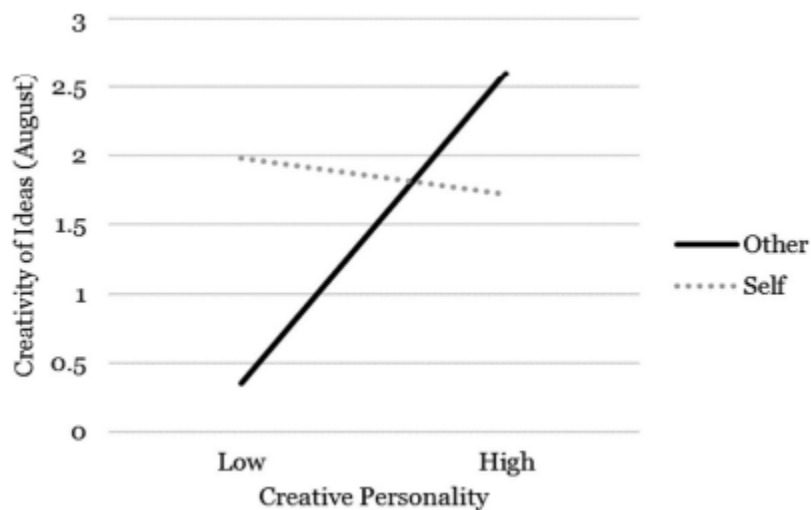
A total of 255 ideas were submitted. First, we counted the total number of ideas each participant submitted (range = 1–3). Next, to create a measure of the creativity level of ideas, independent raters evaluated the originality and usefulness of each idea.<sup>10</sup> Reliabilities were satisfactory ( $r_{wg} = .76$  for originality;  $.84$  for usefulness). A creativity score for each participant was calculated by multiplying the scores on originality and usefulness. For those who submitted more than one idea, we took the average score of that individual’s ideas.

**Table 1** Mean Values, Standard Deviations, and Correlations (Study 1)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Age	32.42	5.41										
2. Gender	.20	.40	.10*									
3. Choice	.51	.50	.04	-								
4.	.25	.43	.01	-	.11**							
Rewards				.11**								
5. Creative personality	1.25	3.42	.00	-.04	.03	-.05						
6. Creative self-efficacy (Time 1)	4.21	1.03	-.01	.06	-.06	-.05	.49**					
7. Creative self-efficacy (Time 2)	4.08	.95	.07	.16**	.04	.02	.25**	.39**				
8. Number of ideas (July)	.21	.64	.02	-.04	-.02	-.07	-.07	.08	.11*			
9. Number of ideas (August)	.44	1.16	.09	-.05	.12**	-.09*	.04	.13**	.21**	.46**		
10. Creativity of ideas (July)	.86	2.86	.01	-.05	-.05	-.01	-.06	.06	.05	.59**	.30**	
11. Creativity of ideas (August)	1.59	3.64	.08	-.06	.13**	-.06	.03	.11**	.18**	.27**	.68**	.24**

Note.  $N = 345$ .

\*  $p < .10$ . \*\*  $p < .05$ .

**Figure 2** Effects of the Interaction of Reward and Creative Personality on Creativity of Ideas (Study 1)

**Table 2** Mean Values and Standard Deviations in Each Condition (Study 1)

Independent variables	Dependent variable				Mediator (T2)	
	Number of ideas		Creativity of ideas		Creative self-efficacy	
	M	SD	M	SD	M	SD
<i>Choice of rewards</i>						
Choice	.54	1.23	2.08	4.09	4.12	.86
No-choice	.28	1.00	1.12	3.08	4.04	1.04
<i>Reward types</i>						
Self reward	.47	1.22	1.72	3.79	4.07	.91
Other reward	.24	.71	1.24	3.16	4.11	1.06
<i>Reward x CPS</i>						
Self reward and low CPS <sup>a</sup>	.47	1.07	1.94	3.91	3.90	.72
Self reward and high CPS	.54	1.27	1.83	3.80	4.22	.94
Other reward and low CPS	.13	.41	.73	2.32	3.80	.96
Other reward and high CPS	.58	1.17	2.75	4.73	4.35	1.23

Note. CPS = Creative personality scale.

<sup>a</sup>CPS values were split at the median to form high and low groups.

### *Choice and Rewards*

We coded Choice as Choice, No-choice, and Control group, and created three dummy variables (for Choice, 1 = choice; 0 = otherwise; for No-choice, 1 = no-choice; 0 = otherwise; for Control group, 1 = control group; 0 = otherwise).

An ANCOVA with age, gender, source, and CPS as covariates showed that Self-individual and Self-unit did not differ in creativity level ( $F_{1,64} = .017, p > .05$ ), and we combined them to form a Self reward category. We coded Rewards as Self reward, Other reward, and Control, and created three dummy codes (for Self, 1 = Self reward; 0 = otherwise; for Other, 1 = Other reward; 0 = otherwise; for Control, 1 = control group; 0 = otherwise).

### *Creative Personality*

We used the same measure as in Study 1. The reliability was .68.

### *Manipulation Checks*

For the choice manipulation, we used the same measure as in Study 1. The reliability was .90. Regarding the manipulation of rewards, we asked participants, except those in the Control group, to describe the reward they were involved in a booklet.

### *Controls*

We controlled for age (years) and gender (0 = female; 1 = male) (George & Zhou, 2001; Zhang & Bartol, 2010). Because the source of the participants (0 = working students; 1 = employees) and their CPS could influence their creative responses, we also controlled for source and CPS in all analyses.

## Study 2: Results and Discussion

### Manipulation Checks and Descriptive Statistics

The mean values of the manipulation check for the choice (5.39) and no-choice (4.06) conditions were significantly different ( $t = 5.08, p < .05$ ), indicating a successful manipulation. Ninety-nine percent of the participants accurately described their condition. Table 4 shows mean values, SDs, and correlations.

### Control Groups, Experimental Groups, and Hypothesis Tests

We used the same statistical methods as those used in Study 1. To test whether choice had an effect beyond the control group, we included the Choice and No-choice dummy variables and omitted the control group dummy (Aiken & West, 1991). The CI for the Choice dummy contained no zero for number (90%, CI [.311, .801]) or for level (90%, CI [2.384, 5.307]), indicating that the Choice condition had an effect on both creativity measures over and above the control group. The CI for the No-choice dummy contained zero for number [90%, CI [-.016, .481]) and for level (90%, CI [-.024, 2.562]), indicating that the No-choice condition was not statistically different from the control group. Table 5 shows that the number and creativity level scores in the Choice condition (1.95 and 9.17) were higher than those in the No-choice (1.55 and 6.11) and the Control (1.39 and 4.50) groups.

Table 3 shows that reward choice had a significant impact on the number and creativity level of ideas. Mean values for number and creativity level reported in Table 5 were higher in the Choice (1.95 and 9.17) than in the No-choice (1.55 and 6.11) conditions, supporting Hypotheses 1a and 1b, and replicating the results from Study 1.

Study 2 also examined Research Questions 1 and 2. Results related to Research Question 1 showed that type of reward (Self vs. Other) had a nonsignificant impact on both the number (90% BCa CI [-.154, .117]) and creativity level of ideas (90% BCa CI [-.835, 1.887]), replicating Study 1. Although results related to Research Question 2 showed a nonsignificant Reward  $\times$  CPS interaction for number (90% BCa CI [-.011, .059]) and creativity level of ideas (90% BCa CI [-.057, .567]), our further examination of the conditional effects revealed that for employees in the Other reward condition, the more creative the personality (a) the more ideas they produced (90% BCa CI [.012, .075]) and (b) the more creative their ideas (90% BCa CI [.133, .659]). The conditional effect was nonsignificant for those in the Self reward condition for both number (90% BCa CI [-.014, .048]) and creativity level of ideas (90% BCa CI [-.062, .342]). In total, results showed that those with creative personalities responded most positively to Other rewards by producing many ideas and ideas that were highly creative. The pattern of these conditional effects in Study 2 is virtually identical to that in Study 1 (Figure 2).

### General Discussion

We conducted a quasi-experimental field study and a laboratory experiment to examine the effects of reward choice on employees' creativity. Results of both studies showed that choice of rewards had positive, significant effects on two creativity measures: number of creative ideas and the creativity level of the ideas. In the field experiment, we also hypothesized and found that CSE explained the effects of choice. In an exploratory vein, we examined whether two reward

categories (Self vs. Other) affected creativity, and whether employees' creative personality interacted with the reward categories to affect employee creativity. Both studies showed that reward category had a nonsignificant effect on the two creativity measures. However, results also showed that creative personality influenced individuals' responses to the rewards—those with a creative personality in the Other reward condition produced more ideas and ideas higher in creativity than those with a less creative personality. Finally, results of the field study showed that CSE mediated the Reward  $\times$  Personality interaction on both creativity measures.

**Table 4** Mean Values, Standard Deviations and Correlations (Study 2)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Age	40.08	8.96										
2. Gender	.45	.50	.17**									
3. Participant source	.53	.50	-.08	-.14*								
4. Control group	.19	.40	.08	-.06	.03							
5. Choice	.39	.49	-.07	-.05	-.05	-.39**						
6. No-choice	.42	.49	.00	.09	.02	-.41**	-.67**					
7. Self reward	.44	.50	-.01	.10	.02	-.44**	.09	.23**				
8. Other reward	.36	.48	-.05	-.05	-.05	-.37**	.26**	.07	-.67**			
9. Creative personality	3.38	3.71	.08	.02	-.35**	-.09	.15*	-.08	.02	.05		
10. Number of ideas	6.97	4.73	-.18**	-.09	-.36**	-.26**	.37**	-.16*	.04	.17**	.30**	
11. Creativity of ideas	1.66	.90	-.16*	-.14*	-.26**	-.20**	.26**	-.10	.06	.10	.21**	.84**

Note. N = 154.

\*  $p < .10$ . \*\*  $p < .05$ .

**Table 5** Mean Values and Standard Deviations in Each Condition (Study 2)

Variables	Dependent variable			
	Number of ideas		Creativity of ideas	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Baseline</i>				
Control group	1.39	.65	4.50	3.56
Low CPS in control group <sup>a</sup>	1.21	.42	3.88	2.89
High CPS in control group <sup>a</sup>	1.45	.93	5.66	4.52
<i>Choice versus No-choice</i>				
Choice	1.95	.96	9.17	5.17
No-choice	1.55	.85	6.11	3.92
<i>Self-versus Other rewards</i>				
Self reward	1.72	.96	7.19	4.27
Other reward	1.77	.89	8.04	5.36
<i>Reward <math>\times</math> CPS<sup>a</sup></i>				
Self reward and low CPS	1.54	.84	6.10	3.50
Self reward and high CPS	1.94	1.06	8.54	4.79
Other reward and low CPS	1.72	.80	7.30	5.37
Other reward and high CPS	1.81	1.00	8.89	5.33

Note. CPS = Creative personality scale.

<sup>a</sup> CPS values were split at the median to form high and low groups

Contributions, Limitations, and Future Research Directions

An interesting and consistent finding from our studies is the strong, positive effect of choice of rewards on both the number and the creativity level of employees' ideas. These results contribute to the creativity literature empirically and theoretically. No prior field study examined the effects of reward choice on employee creativity and few examined these effects in laboratory contexts (Byron & Khazanchi, 2012). Most prior studies involving choice and creativity examined the effects of choice of tasks or task materials on creativity or divergent thinking. For example, Amabile and Gitomer (1984) showed that children who had a choice over task materials exhibited higher creativity than those who did not have a choice. Extending this study, Chua and Iyengar (2006) found that the effect of choice was a function of the size of the set of task materials from which individuals selected. Those having a large set of materials from which to choose exhibited lower levels of divergent thinking than students having a relatively small set. Our studies provide some support for this possibility by showing positive effects of choice when the choice involves few rewards (4 and 3 rewards in Studies 1 and 2, respectively).

Future work might extend our studies by examining whether the positive effect of choice diminishes when individuals choose from a larger set of rewards. Scholars have argued that when the choice set is excessively large, choice becomes overwhelming and demotivating, leading to lowered creativity (Chua & Iyengar, 2006; Iyengar & Lepper, 2000; Patall et al., 2008). Future work might examine this possibility and the specific number of choices that lead to positive responses (e.g., high creativity) and the number that result in lowered creativity.

Our field study found that CSE served as the mediating mechanism underlying the effect of choice of rewards on employee creativity, suggesting that having a choice helped enhance the employee's belief that he or she could produce creative work. These results suggest that providing employees with an opportunity to choose a reward can prompt them to self-reflect on their capability and increase their CSE. Directly measuring and testing the mediating mechanism advanced our theoretical understanding, especially regarding the effectiveness of CSE in explaining the observed main effect of choice and interactive effects involving rewards and creative personality on creativity. Prior studies of choice and rewards seldom tested psychological mechanisms (Malik & Butt, 2017), and to date, the mediating role of CSE had not been theorized or empirically demonstrated.

Another interesting finding of our research is that employees with higher levels of creative personality benefited most from Other rewards and produced more ideas and ideas that were more creative than employees with lower levels of creative personality. These results show the value of adopting interactive approaches (van Knippenberg & Hirst, 2020; Woodman et al., 1993) when considering the effects of rewards on creativity. Evidently, employees with a creative personality found the opportunity to contribute to charities more attractive than the Self rewards and responded by producing more ideas and ideas that were highly creative. By contrast, those with a less creative personality produced fewer and less creative ideas in the Other reward condition but responded somewhat more positively to the traditional, Self rewards. Focusing on the interplay between creative personality and reward types, our work extends prior interactive approaches by providing a fine-tuned analysis of how and why employees with a creative personality reacted more positively to Other rewards by exhibiting greater creativity.

Our research made methodological contributions. The quasiexperimental field study examined objective reward conditions versus asking employees for their perception of rewards which has implications for the design of reward programs. Also, in the quasi-experiment, we gathered choice, reward, CSE and creativity data from multiple sources (experiment, employee, and raters) at four points in time (T1 survey, intervention, T2 survey, and creativity rating). Our

design not only allowed the variables to be captured by the appropriate method and source but also avoided common method variance (Podsakoff et al., 2003). Furthermore, our laboratory study replicated many of the results obtained in the field study.

Our quasi-experiment was conducted in a single Call Center. Although we replicated some of the results in a laboratory setting, we do not know whether the results obtained in our research are generalizable to other types of organizations or with employees in other types of jobs. Research is needed to test our ideas in other organizations, and with employees in different occupations and working on different jobs. Second, both studies were conducted in one culture setting. We call for future research to replicate our results in other parts of the world.

Third, we observed a statistically significant Reward  $\times$  Creative Personality interaction in Study 1 but not in Study 2, suggesting that more work is needed to sharpen our understanding of the theoretical mechanism driving this interaction. Fourth, in Study 1, for the outcome of the creativity level of ideas, we assigned a score of zero to the employees who did not submit ideas which is identical to the score received by those who submitted ideas rated as very low in creativity. Although this approach follows the footprint of prior researchers (e.g., Grijalva et al., 2020) and the practices at the Call Center that employees who did not submit any ideas in any given month received a score of zero, one might argue not submitting any ideas and submitting uncreative ideas are different. Although our results are generally consistent across the two creativity indicators and the two studies (with Study 1 including nonsubmitters and Study 2 not having nonsubmitters), research devoted to the development of a coding scheme for employee suggestion programs is now needed. Such research should satisfy organizations' need of accounting for employees' participation and contributions to suggestion programs in a practical and comprehensive fashion. Finally, it is possible that the choice condition exposed participants to a greater range of rewards than the no-choice condition. Even if employees in the no-choice condition could not choose their reward, awareness of other rewards might supply efficacy cues. Future research is needed to directly investigate this interesting possibility.

### Implications for Management Practice

Our results involving the effects of reward choice in an organization-wide suggestion program indicate that managers should consider offering a set of rewards in such programs and giving their employees the opportunity to select the rewards they prefer. Second, to encourage employees with creative personalities to develop new and useful ideas, managers might consider including rewards aimed at helping others, such as making a donation to a charity. Our results showed that such rewards might be especially powerful in enhancing employee creativity if employees have a creative personality. But, for employees with a less creative personality, Other rewards that involve benefiting those in need might result in lower creativity and should be avoided. Third, our studies inform managers that the Reward  $\times$  Creative Personality interaction fostered creativity via elevating the employees' CSE, underscoring the value of boosting the employees' self-views about their own capabilities of being creative.

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## Notes

<sup>1</sup> The University where the data collection was conducted did not require research in social science to obtain approval from the IRB at that time. The researchers strictly followed the American Psychological Association requirements regarding the treatment and protection of human participants while conducting the study. All members in our research team are experienced researchers who are very familiar with those requirements.

<sup>2</sup> Because participants in the choice condition selected rewards, we examined whether the reward choice was a function of our nonmanipulated moderating variable: creative personality (CPS). To test this, we conducted an ANCOVA with age and gender entered as covariates. Results showed that CPS did not vary by Self versus Other rewards ( $F(1, 159) = .14, p > .05$ ) indicating that participants' creative personality did not play a role in their selection of rewards.

<sup>3</sup> To examine whether employees' CSE increased after they were offered a choice of rewards, we conducted a repeated measures MANOVA. In this analysis, we included time as a within-subject factor, choice condition and reward type as between-subject factors, as well as age and gender as covariates. Results showed that the interaction of time and choice was significant ( $F(1, 255) = 5.31, p < .05$ ), indicating that CSE varied by time and choice. We then used a Bonferroni test to provide an estimation of the pairwise comparison where the Estimated Marginal Mean (EMM; mean adjusted based on covariates specified in the above MANOVA) was reported. Consistent with our arguments, for employees in the choice condition, their CSE at Time 2 (EMM = 4.21) was higher than their CSE at Time 1 (EMM = 4.09), although this difference was not statistically significant ( $p > .05$ ).

<sup>4</sup> Some authors have suggested that intrinsic motivation (IM) might mediate the effects of rewards on creativity (see Patall et al., 2008). To examine this possibility, we included measures of IM in the T2 survey. Results showed that the addition of IM as a mediator did not improve mediation results over and above CSE. These results are available from the authors.

<sup>5</sup> National Taiwan University Research Ethics Committee (No. 201806HS002 titled "Enhancing the Creativity of Employees' Ideas: An Experimental Investigation of Rewards and Choice").

<sup>6</sup> To ensure that participants were not aware of the many different conditions (i.e., rewards, choice, and control), we (a) asked them not to peek at others' booklets both verbally and on the first page of the booklets and (b) separated the participants to avoid physical closeness that could lead to communication among participants (Cook & Campbell, 1979). Also, we asked participants to report in the booklet whether they were aware of any other conditions during the experiment. Results showed that 99% of the participants were unaware of other conditions. As such, information leakage was unlikely.

<sup>7</sup> We attempted to increase the credibility of the task and to ensure the engagement of the participants. First, we asked them whether they have heard of the issue of people not being able to put what is taught into practice. Results showed that 100% of them had heard of this issue. Second, following the study by Baer et al. (2010), we asked participants to rate their interest in the task using the following items: “I would be interested in completing the task in this experiment” and “I find the task described in this experiment interesting.” The reliability was .93. Ratings were made on a scale ranging from strongly disagree (1) to strongly agree (7). Results showed a mean rating of 4.90 (s.d. = 1.21) revealing that participants considered the task to be moderately interesting. Finally, we assured participants that the winning ideas would be declared and rewards delivered to them in a month, if their ideas were selected. Thus, we were confident that the task was able to elicit creative responses from the participants.

<sup>8</sup> For winning authors from Continuing Education and Executive MBA programs, the reward was to be shared with their class group. We ensured that all classes we approached had the design of class group projects that required group interactions during the entire semester. For winning authors from the organizations, the reward was to be shared with their work team.

<sup>9</sup> We did not examine the Self-discretionary time (the author of a winning idea would obtain priority to select the days off) reward that was included in Study 1 because it was not applicable for Study 2 participants who were employees across multiple organizations.

<sup>10</sup> Three trained doctoral students in the management field who had work experience and who were not familiar with our study hypotheses evaluated the ideas using a scale ranging from 0 (not original at all; not useful at all) to 6 (extremely original; extremely useful). All ideas were randomized before being presented to the raters to control for possible order effects.