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Why Reject Creative Ideas? Fear as a Driver of Implicit Bias Against Creativity

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Biases against creativity seem to be activated when people are motivated to reduce uncertainty. Drawing on the appraisal model of emotion, this study tested whether and how emotions with varying levels of uncertainty appraisals affect biases against creativity. This experimental study showed that fear, characterized by a high-uncertainty appraisal, promoted implicit, but not explicit, biases against creativity more strongly than low-uncertainty emotions such as anger and happiness. Compared with individuals who experienced anger and happiness, those who experienced fear provided lower creativity ratings because of their implicit biases against creativity. These results highlight the importance of considering emotions to understand the individuals' biases against creativity and their recognition of creative ideas.

Creativity, which is generally defined as the production of novel and useful ideas, has been increasingly appreciated in organizational and educational settings (Anderson, Potocnik, & Zhou, 2014). Despite such widespread appreciation and endorsement of creativity, being creative is inherently a risky behavior, thereby presenting a chasm between what people say and what they do (Tyagi, Hanoch, Hall, Runco, & Denham, 2017). Undoubtedly, the fear of receiving negative reactions constitutes one of the most significant concerns that discourage people from communicating creative ideas (Morrison, 2011). Employees' implicit theory or belief that others do not want to hear any change- or improvement-oriented ideas is not unfounded (Detert & Edmondson, 2011). Given this inherent contradiction whereby people have implicit negative attitudes toward creative ideas despite potential benefits, simply encouraging employees to express creative ideas has a limited value without considering how those ideas are recognized and accepted by others (Mueller, Melwani, & Goncalo, 2012). This study complements the existing

studies that have mostly focused on predictors of creativity or idea generation (Hammond, Neff, Farr, Schwall, & Zhao, 2011) by investigating when people appreciate the value of creative ideas presented to them, specifically focusing on their emotional states.

According to the systems perspective of creativity (Csikszentmihalyi, 1988), creativity is not determined solely by the creator but through interactions among creators, the field or society, and the corresponding domain. If an individual creates something, the product's originality and value should be socially validated by the field through which the product being judged to be creative will be accepted and included in the domain of interest. Organizational creativity research also underscores the significance of creativity as evaluated by others, including coworkers and supervisors (Anderson et al., 2014; Zhou & Hoever, 2014). Therefore, in the creative process, the role of the evaluators or "gatekeepers" who judge the potentially creative ideas is as important as that of the creators.

For these reasons, creative people, by themselves, may not be able to develop creative organizations; their creative efforts should be recognized as such by others (Elsbach & Kramer, 2003). No shortage of examples exist from various fields that breakthrough ideas were rejected in their inception and took time before they were acknowledged by others (e.g., Post-It notes). Given the increasing speed and breadth

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of knowledge exchange and the flooding of potential ideas as a result of information revolution, recognizing and accepting creative ideas is as important as generating new ones to increase the overall creative performance of individuals, work groups, and organizations (Berg, 2016; Mueller, Wakslak, & Krishnan, 2014).

In the creativity literature, extensive empirical work has been devoted to individual characteristics affecting idea generation, such as personality, motivation, and cognitive styles, as well as favorable social and contextual conditions, such as task design, leadership, and organizational climate (Anderson et al., 2014; Reiter-Palmon, Beghetto, & Kaufman, 2014; Williams, Runco, & Berlow, 2016). By contrast, the other side of the creative process involving recognition of creativity has been neglected, leaving the question of how people evaluate creative ideas largely unanswered. In a recent study, Mueller et al. (2014) demonstrated that felt or perceived uncertainty is a main reason for the paradox that people reject creative ideas despite their positive belief toward creativity. The more original the idea, the more that uncertainty is likely present (Amabile, 1996). Thus, the uncertainty associated with the possibility of failure and social rejection resulting from creativity (Nemeth, 1986) could facilitate negative views or implicit bias against creativity. For this reason, ambivalent attitudes toward creativity may emerge, regardless of favorable personal characteristics related to creativity (Mueller et al., 2012).

This study extends previous findings that isolate perceived uncertainty and accompanying implicit bias as a main cause of depreciating creativity by focusing on the role of emotion in activating such processes. Emotions and mood states affect how individuals think, process information, and make decisions; all of which shape their judgments of the target (Lyubomirsky, King, & Deiner, 2005). Numerous studies have elucidated the affective underpinnings of creativity, such as the effect of positive mood on cognitive flexibility (see Davis, 2009 for a meta-analytic review). However, the influence of specific emotions on the recognition of creativity has not been examined yet, particularly in connection with uncertainty, which is a critical challenge in recognizing creativity.

To understand the role of emotion in shaping attitudes toward, and recognition of, creativity, emotions were experimentally manipulated with different levels of uncertainty, that is, fear versus anger and happiness. The emotion with a high level of uncertainty (i.e., fear) was expected to elicit negative attitudes or biases against creativity and low creativity evaluations. On the contrary, emotions with low levels of uncertainty (i.e., anger and happiness) probably will not generate such negative effects on attitudes toward and recognition of creativity. As shown in previous studies (Mueller et al., 2012, 2014), biases against creativity can be only implicit, rather than explicit, because individuals tend to believe in and appreciate the value of creativity, which renders favorable attitudes toward creativity

personally and socially desirable. Thus, biases against creativity may operate unconsciously as implicit psychological inclinations, rather than overt attitudinal judgments (Lane, Banaji, Nosek, & Greenwald, 2007). This study contributes to the literature on creativity by revealing the way emotions with differing levels of uncertainty lead to implicit and explicit attitudes toward and resulting evaluations of creativity.

UNCERTAINTY AS A DRIVER OF BIASES AGAINST CREATIVITY

Judging highly original ideas may cause tension on the side of the evaluator because of corresponding uncertainty perceptions (Mueller et al., 2012). Uncertainty involves a situation in which the future cannot be predicted. Individuals tend to experience uncertainty on the basis of subjective perceptions, rather than objective evaluations of the situation. They also perceive uncertainty in the absence of sufficient information for an accurate assessment and prediction (Gifford, Bobbitt, & Slocum, 1979). Uncertainty is generally an aversive state that diminishes both psychological well-being and physical health (Klein, Fencil-Morse, & Seligman, 1976). Thus, individuals are generally motivated to avoid uncertain situations (Whitson & Galinsky, 2008). This condition leads to negative associations and biases against creativity that inherently contains uncertainty because of its novelty and often experimental nature (Mueller et al., 2014). In two experiments, Mueller et al. (2012) demonstrated that uncertainty perceptions caused by the situation (lottery for additional pay) and reduced tolerance for uncertainty (being asked to identify a single solution) increased implicit biases against creativity after controlling for openness to experience which is highly related to creativity.

UNCERTAINTY AS A CRITICAL APPRAISAL DIMENSION OF EMOTIONS

Emotions are informative in developing perceptions and situation assessments even when they are elicited by unrelated events (Forgas, 1995; Gangemi, Mancini, & Van Den Hout, 2007; Lerner, Small, & Loewenstein, 2004). To explain the sense-making and interpretive function of emotions, the appraisal model suggests a close connection between emotions and corresponding cognitive appraisals and maintains that emotions activate particular appraisals and interpretations of the situation. The appraisal model advances two critical assumptions (Lerner & Keltner, 2001). First, emotions continuously enable adaptive changes in cognition, physical responses, and behaviors, even after the emotion-eliciting event has passed (Gangemi et al., 2007). Second, specific emotions influence social judgments

because emotions are closely aligned with situational evaluations, and their accompanying appraisals reflect key meanings of the situation (Lazarus, 1991; Lerner et al., 2004). Thus, this study proposed that the way an individual evaluates a subsequent stimulus, such as an event or idea, can be colored by emotions s/he experiences at the moment.

Cognitive appraisal underlying emotional experiences is pivotal in understanding the function of specific emotions because a central appraisal dimension underlying each emotion determines the effect of emotions on subsequent judgments and behaviors (Lerner & Keltner, 2001). Most research on emotion resorts to the valence dimension of appraisal, which is regarded as the primary appraisal dimension defined as the extent to which an experience is pleasurable (Forgas, 1995). However, empirical evidence showing that different emotions of the same valence result in disparate judgments highlight the need to consider additional appraisal dimensions (DeSteno, Petty, Wegener, & Rucker, 2000). In this respect, scholars have identified six appraisal dimensions that account for various interpretive processes underlying different emotions, namely valence, personal control, certainty, attentional activity, situational responsibility, and anticipated effort (Lazarus, 1991; Smith & Ellsworth, 1985). Among these six appraisal dimensions, this study attends to certainty because of its significance in shaping individual attitudes toward and evaluations of creativity (Mueller et al., 2012).

EMOTIONS WITH UNCERTAINTY APPRAISAL AND BIASES AGAINST CREATIVITY

This study posits that emotion characterized by high uncertainty appraisal generates biases against creativity, which ultimately leads to the depreciation of creative ideas. In identifying such uncertainty-laden emotion, the valence dimension was also considered. Of the emotions with negative valence, fear and anger were identified as high- versus low-uncertainty emotions, respectively (Smith & Ellsworth, 1985). Anger and fear, although both negative in valence, differ in appraisals of uncertainty (Lerner & Keltner, 2001). Individuals experiencing anger evaluate the situation as certain with known cause-and-effect relationships, thereby perceiving less ambiguity or uncertainty, and thus often choosing risk-taking options (Foo, 2011). Conversely, fear makes a person aware of uncertainty and become sensitive to potential loss or threat in the situation; thus, individuals who experience fear tend to assess risks more pessimistically and adopt risk-averse alternatives (Lench & Levine, 2005).

Among the emotions with positive valence, the study focuses on happiness, which reflects a generalized positive appraisal of the given situation with high certainty. For the sake of completeness, the certainty appraisal can be differentiated among positive emotions, such as happiness and

hope being both positive but representing emotions with low versus high uncertainty, respectively. Nevertheless, the study includes only happiness in positive emotions because of concern that positive experiences are emotionally less differentiated than negative experiences (Ellsworth & Smith, 1988). Moreover, unlike the daily emotional experiences with richness, history, and substantive incentives or penalties at stake, experimentally induced hope could simultaneously generate and confound with various emotions such as gratitude, pride, compassion, and even happiness depending on the stimuli used (Bednarski, 2012). By contrast, happiness is a broad positive emotion that could be elicited reliably without much confusion on the side of participants.

In sum, by focusing on the *uncertainty* dimension, along with the consideration of valence, three distinct emotions, namely, anger, fear, and happiness, were predicted to differentially influence biases against creativity. Specifically, individuals who experience anger and happiness are likely to perceive less uncertainty in the situation, which allows them to be more tolerant or accepting of uncertainty and risks (Mueller et al., 2012). For this reason, anger and happiness may reduce negative attitudes or biases against novel ideas that are prone to be uncertain and risky. On the contrary, individuals who experience fear will perceive more uncertainty and will be less tolerant with the possibility of uncertainty and risk, thereby developing strong biases against creative ideas (Mueller et al., 2014). These arguments inform the following hypothesis.

Hypothesis 1: Individuals who experience fear will be more biased against creativity than those who experience anger or happiness.

IMPLICIT BIASES INSTEAD OF EXPLICIT BIASES AGAINST CREATIVITY

This study further hypothesizes that such negative implications of emotions with uncertainty appraisal on biases against creativity will be observed only for implicit biases, rather than explicit or overt attitude assessments regarding creativity. Undoubtedly, creativity is highly appreciated in contemporary industrial and educational settings, which generates considerable normative pressure to support creative ideas (Flynn & Chatman, 2001) and a strong social desirability bias against negative perspectives on creativity (Runco, 2010). For this reason, individuals who experience emotions with high uncertainty may not manifest their bias against creativity explicitly, even when the assessment is conducted in a private, self-reporting manner. Indeed, explicit attitude reports are subject to self-presentation biases and self-enhancing motivation (Hofman, Gawronski, Gschwendner, Le, & Schmitt, 2005). Mueller et al. (2012) demonstrated that uncertainty manipulation (i.e., additional

pay by lottery) negatively affected creativity ratings only through implicit biases against creativity assessed by the Implicit Association Test (IAT), but not through the explicit attitude assessments. The study further validates this pattern and investigates if emotional experiences generate implicit biases but not explicit negative attitudes toward creativity.

Hypothesis 2: The effect of fear on biases against creativity will be observed only for implicit measures but not for explicit measures.

UNCERTAINTY-LADEN EMOTION, IMPLICIT BIASES, AND CREATIVITY EVALUATION

Under uncertainty, individuals tend to make biased, rather than rational, judgments, and they usually fail to notice that their judgments are imbued with such subjectivity (Tversky & Kahnemann, 1973). Evaluating others' creative ideas is clearly an uncertain situation; thus, it can be meaningfully affected by individual biases such as negative associations involving creativity (e.g., potential failure, errors, and social rejection). Recent studies revealed that even highly experienced experts and managers are not good at predicting the potential success of an idea (Berg, 2016; Kornish & Ulrich, 2014). To fully understand the evaluative process of creativity, situational and attitudinal components surrounding the evaluator beyond his/her knowledge and managerial roles should be considered. This study proposes that individuals' emotional experiences elicited by social situations and resulting biases against creativity may comprise critical processes that shape their appreciation of creativity or lack thereof.

Consistent with Mueller et al. (2012), it was expected that individuals who experience a high-uncertainty emotion such as fear will regard the situation as highly uncertain, thereby activating an implicit bias against creativity, which results in the tendency of inadequate appreciation of creativity. Earlier studies that addressed the relationships between implicit attitudes and cognitive appraisals using IAT suggested that implicit negative associations regarding the target strengthens top-down stereotypic processing (Lane et al., 2007). As individuals with implicit biases against creativity show stereotypical thinking that prefers conventional and proven ideas, they are less likely to recognize and accept creative ideas.

Hypothesis 3: Individuals who experience fear will evaluate creative ideas more negatively than will those who experience anger or happiness.

Hypothesis 4: The relationship between fear and idea evaluation will be mediated by implicit biases against creativity.

METHOD

Participants

Participants were 177 undergraduate and 15 graduate students who were recruited from psychology classes at a mid-sized university in South Korea (26% majored in psychology). The mean age was 22.02 ($SD = 2.28$, range = 12) and the majority were women ($n = 128$), with 64 men. They were given \$5.00 for their participation. The participants were randomly assigned to the three emotion elicitation conditions: fear ($n = 65$), anger ($n = 66$), and happiness ($n = 61$). In this experiment, informed consent was obtained from all participants.

Procedure

Upon arrival to the laboratory, an experimenter explained that the experiment would be conducted to determine the relationship between attention and creativity. After this explanation, participants completed the Korean version (Yoo, Lee, & Ashton, 2004) of the openness-to-experience subscale of the international personality item pool (Goldberg, 1999). Then, the participants watched one of three video clips before they self-reported their attitudes toward creativity and practicality on a seven-point scale. Implicit attitudes toward creativity were assessed using the IAT after watching a video clip. After the IAT, the participants were asked to evaluate the level of creativity of two ideas. Finally, demographic and general information such as sex, education status, and prior experience with the IAT were collected.

Materials

Emotion elicitation

Unlike previous studies in which emotions were induced by describing situations that could elicit the target emotions (Foo, 2011; Lerner & Keltner, 2001), three short video clips were used to elicit each emotion. Three video clips were selected on the basis of (a) length, (b) intelligibility, and (c) discreteness (Gross & Levenson, 1995). Anger was elicited by a news broadcast (1 min, 23 sec), in which children were abused physically at a daycare center. Fear was elicited by the movie *Paranormal Activity 3* (2 min, 27 sec), showing a scene with a frightened girl afflicted by a mysterious power. Happiness was elicited by the movie *About Time* (1 min, 27 sec), which depicted a lively wedding scene. The current emotion elicitation procedure can compensate for weaknesses of methods that instruct participants to recall past emotional experiences, which are affected by differences in the intensity of individual experiences and imaginations.

Explicit bias measure

Adopting the procedure used by Mueller et al. (2012), explicit attitudes for creativity were assessed by having

participants rate their positive and negative feelings toward creative and practical stimuli on a 7-point scale (1 = *strongly negative*, 4 = *neutral*, 7 = *strongly positive*). Stimuli related to creativity were *innovative, unique, new, original, novel, and creative* ($\alpha = 0.89$); stimuli related to practicality were *useful, appropriate, functional, practical, feasible, and constructive* ($\alpha = 0.82$). With reference to the Korean version of an instrument for evaluating creative products (Kim & Lee, 2004), words associated with creativity, such as *unique* and *new*, and words associated with practicality, such as *appropriate* and *feasible*, were added to the original items of Mueller et al. (2012). Similar to the method used by Mueller et al. (2012), explicit bias scores were calculated by subtracting the average score for stimuli associated with creativity from the average score for stimuli associated with practicality.

IAT

Just as biases against race or gender are not necessarily overt (Greenwald & Banaji, 1995), negative attitudes and biases against creativity could be deeply rooted in the unconscious (Mueller et al., 2012). Therefore, in addition to direct methods to assess explicit attitudes toward creativity (e.g., self-reports), an indirect measure through the IAT (Greenwald, McGhee, & Schwartz, 1998) was used. The IAT is designed to detect implicit attitudes that occur outside of conscious awareness by relying on speeded responses when categorizing stimuli on a computer screen (Greenwald & Banaji, 1995).

The IAT was completed using the *Inquisit* web software. Participants were required to sort each stimulus that appeared on the screen into one of four categories (*creativity, practicality, good, and bad*), positioned in the top-right and top-left corners of the screen, as quickly and accurately as possible. The stimuli were the same as the explicit measures, except for one (*creative*), which was changed (*ingenious*) because the stimulus included in the category name of *creativity*. The items of Greenwald and Farnham (2000) were utilized for the *good* and *bad* categories: the *good* category contained *joy, lovely, pleasant, glorious, beautiful, and happy*; the *bad* category included *agony, terrible, awful, painful, humiliated, and nasty*.

If it is ambiguous as to which category the stimulus belonged, reaction times will be slow, which leads to measurement error (Lane et al., 2007). Thus, prior to testing, participants were provided with the opportunity to become familiar with the stimuli affiliated with the four categories through practice sessions. The IAT consisted of seven blocks, but only four were designed to assess implicit attitudes toward creativity (see Table 1). Participants pressed the *D* key on a keyboard with their left index finger when the word presented in the middle of the screen belonged to the left-hand category and the *K* key with the right index finger when the word was related to the right-hand category. If participants miscategorized a word, a red cross was presented in the middle of the screen, indicating that a correction needed to be made.

TABLE 1
IAT block sequences

Block	No. of trials	Function	Left key (D)	Right key (K)
1	20	Practice	Practicality	Creativity
2	20	Practice	Good	Bad
3	20	Actual test	Practicality + Good	Creativity + Bad
4	40	Actual test	Practicality + Good	Creativity + Bad
5	20	Practice	Creativity	Practicality
6	20	Actual test	Creativity + Good	Practicality + Bad
7	40	Actual test	Creativity + Good	Practicality + Bad

The order of combined configuration tasks (blocks 3, 4, 6, and 7) was counterbalanced across the participants. Half of the participants performed the block combination of *creativity* and *bad* first; the other half received the combination of *creativity* and *good* first to reduce the order effects (Lane et al., 2007). The order of the IAT and explicit measures was also counterbalanced to minimize effects of measurement order. No significant differences were observed between participants who performed the IAT first and vice versa in terms of explicit biases, $t(190) = -0.746$, $p > 0.05$, and implicit attitudes toward creativity, $t(190) = -0.439$, $p > 0.05$.

The IAT assumes that faster reaction times reflect stronger associations between the words related to a category sharing a response key. Implicit bias scores were calculated by using the D statistic of the IAT (Greenwald, Nosek, & Banaji, 2003). Data from the four critical combined blocks were used to compute IAT scores (D), applying an improved algorithm (Greenwald et al., 2003).¹ As there was no participant for whom more than 10% of trials had latencies less than 300 ms, no participants were excluded. For detailed information on the IAT scoring algorithm, see Greenwald et al. (2003). A greater D score indicates a greater level of implicit bias against creativity.

Idea evaluation task

Participants were asked to rate two creative ideas: (a) a new transportation system based on autonomous vehicles that can communicate among themselves to increase traffic flow and decrease accidents, and (b) a new power technology that allows people to generate electricity by walking on roads installed with electric power generators under the

¹To obtain the D score, we deleted trials that were longer than 10,000 ms from blocks 3, 4, 6, and 7, and then removed participants for whom more than 10% of trials had a latency less than 300 ms (Greenwald et al., 2003). Then, we computed the inclusive standard deviation for all trials in blocks 3 and 6 and trials in blocks 4 and 7; and computed the mean latency for responses in blocks 3, 4, 6, and 7. Finally, we divided each mean difference score by its associated "inclusive" standard deviation, obtained from block 4, after the two mean differences ($M_{\text{Block 6}} - M_{\text{Block 3}}$) and ($M_{\text{Block 7}} - M_{\text{Block 4}}$). The D score is the equal weight average of the two resulting ratios (Greenwald et al., 2003).

surface. Participants rated these ideas on the degree of creativity on a seven-point scale (1 = *not at all*, 7 = *extremely*) using six words related to creativity (e.g., *new*, *novel*, and *creative*). The two ideas received comparable creativity ratings: autonomous vehicles ($M = 5.23$, $SD = 1.40$) and power technology ($M = 5.71$, $SD = 1.32$).

RESULTS

Table 2 shows the descriptive statistics and correlations among all study variables.

Manipulation Check of Emotion Elicitation

For a manipulation check, a pretest of the emotion elicitation using the three video clips was conducted, instead of letting the current participants self-report their emotions. This procedure was implemented because exposing labeled state emotions to participants for a manipulation check can influence their subsequent judgments, which could confound the results (Keltner, Ellsworth, & Edwards, 1993; Lerner & Keltner, 2001). For the pretest, 21 participants were randomly assigned to anger, fear, and happiness conditions. After watching the corresponding video clip, participants were asked to report their emotions (*fearful*, *angry*, and *happy*) using a seven-point scale (Gross & Levenson, 1995).

Considering the relatively small sample sizes in each condition, we compared the three emotion-eliciting conditions using a nonparametric analysis called the Kruskal-Wallis test. The test confirmed that the emotions were successfully induced as intended. Specifically, the participants in the anger condition, $\chi^2(2, N = 21) = 16.28$, $p < .001$, M

rank = 17.79, reported feeling more anger than did those in the fear ($n = 7$, M rank = 10.43, $z = -2.992$, $p = 0.003$) and happiness conditions ($n = 7$, M rank = 4.79, $z = -3.298$, $p = 0.001$). Similarly, the participants in the fear condition, $\chi^2(2, N = 21) = 17.37$, $p < .001$, M rank = 17.71, reported more fear than did those in the anger (M rank = 11.14, $z = -2.930$, $p = 0.003$) and happiness conditions (M rank = 4.14, $z = -3.302$, $p = 0.001$). Finally, the participants in the happiness condition, $\chi^2(2, N = 21) = 15.54$, $p < .001$, M rank = 18.00, reported experiencing more happiness than did those in the anger (M rank = 6.50, $z = -3.278$, $p = 0.001$) and fear conditions (M rank = 8.50, $z = -3.198$, $p = 0.001$).

The video clip for the fear condition was slightly longer than the clips for the anger and happiness conditions. However, the manipulation check confirmed that the intensity of emotional reaction on the fear clip, $\chi^2(2, N = 21) = 2.41$, $p > .05$, M rank = 12.71) did not differ from those on the anger (M rank = 12.07) and happiness clips (M rank = 8.21). This finding suggests that clip length does not affect the emotion induction procedures.

HYPOTHESIS TESTS

An analysis of covariance (ANCOVA), controlling for openness to experience, was conducted to determine differences in implicit attitudes toward creativity among the three experimental groups (anger, fear, and happiness). Results revealed that emotion significantly influenced implicit biases against creativity, $F(2, 188) = 6.04$, $p < 0.05$, $\eta_p^2 = .06$, regardless of the degree to which people were open minded. Participants in the anger ($M = -0.15$,

TABLE 2
Descriptive statistics and correlations among all variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Sex	–									
2. Educational background	–0.13	–								
3. Prior experience with IAT	–0.06	0.01	–							
4. Openness to experience	0.13	–0.12	–0.01	–						
5. Condition (1 = Anger, 0 = Fear)	0.08	0.04	0.07	0.21*	–					
6. Condition (1 = Happiness, 0 = Anger)	–0.02	0.17	0.08	–0.05	–	–				
7. Condition (1 = Happiness, 0 = Fear)	0.06	0.20*	0.15	0.17	–	–	–			
8. Explicit biases (Practicality-Creativity)	–0.01	0.17*	0.02	–0.21**	–0.02	–0.03	–0.06	–		
9. Implicit biases (“D”)	–0.08	–0.01	–0.05	–0.25**	–0.28**	–0.06	–0.30**	0.26**	–	
10. Creativity rating	0.04	–0.03	–0.05	0.19**	0.23**	0.02	0.26**	–0.08	–0.43**	–
<i>M</i>	0.33	1.14	0.14	3.33	0.50	0.48	0.48	0.04	–0.08	0.00
<i>SD</i>	0.47	0.50	0.35	0.48	0.50	0.50	0.50	0.94	0.44	1.00

Note. The number of samples in the anger condition was 66, fear 65, and happiness 61. The total number of participants was 192. Creativity rating was the variable reduced through principal component analysis. * $p < 0.05$, ** $p < 0.01$

$SD = 0.38$) and happiness conditions ($M = -0.20$, $SD = 0.47$) showed less of implicit biases than did participants in the fear condition ($M = 0.08$, $SD = 0.43$, see Figure 1). A planned contrast revealed that participants in the fear condition showed greater negative implicit associations with creativity than did participants in the anger and happiness conditions, $F(1, 188) = 11.58$, $p < 0.01$, 95% CI [0.19, 0.70], $\eta_p^2 = .06$, but no significant difference was observed between the anger and happiness conditions, $F(1, 188) = 0.58$, $p > 0.05$, CI [-0.20, 0.09]. Thus, Hypothesis 1 was supported for the implicit bias measure using IAT.

Another ANCOVA, controlling for openness to experience, was performed using the explicit self-reported attitudes toward creativity. Unlike implicit biases toward creativity, no significant differences exist in explicit biases toward creativity among participants in the anger ($M = 0.05$, $SD = 1.05$), fear ($M = 0.09$, $SD = 0.91$), and happiness conditions ($M = -0.01$, $SD = 0.88$), $F(2, 188) = 0.099$, $p > 0.05$. A planned contrast also exhibited no significance difference between participants in the fear condition and those in the anger and happiness conditions, $F(1, 188) = 0.00$, $p > 0.05$, 95% CI [-0.57, 0.57], as well as between the anger and happiness conditions, $F(1, 188) = 0.20$, $p > 0.05$, CI [-0.40, 0.25]). Therefore, Hypothesis 2 was confirmed in that emotional experiences affected only the implicit, but not explicit, biases against creativity.

Before testing Hypothesis 3, creativity ratings for the two evaluation tasks were combined into one variable through averaging them, because they were significantly correlated ($r = .27$, $p < 0.01$). Moreover, the goal of this analysis was to compare the overall level of creativity recognition across various creative stimuli. The analysis using ANCOVA, controlling for openness to experience, revealed significant differences in creativity ratings among the three groups, F

(2, 188) = 4.59, $p < 0.05$, $\eta_p^2 = .05$. A planned contrast revealed that participants in the anger ($M = 0.15$, $SD = 0.94$) and happiness conditions ($M = 0.19$, $SD = 0.80$) rated the ideas as more creative than did participants in the fear condition ($M = -0.34$, $SD = 1.15$), $F(1, 188) = 9.11$, $p < 0.01$, 95% CI [-1.50, -0.31], $\eta_p^2 = .05$ (see Figure 2). However, creativity ratings in the happiness condition did not significantly differ from those in the anger condition, $F(1, 188) = 0.10$, $p > 0.05$, CI [-0.29, 0.40]). These patterns confirmed Hypothesis 3.

Hierarchical multiple regression analysis was conducted to determine whether the relationships between the three emotion conditions and creativity ratings were mediated by implicit attitudes toward creativity. Anger and happiness were assigned together as a reference category in contrast with fear. As reported in Table 3, results revealed that the significant relationship between emotion (i.e., fear) and creativity ratings, $\beta = -0.21$, $t(190) = -3.02$, $p < 0.01$, became insignificant when implicit biases against creativity were included in the model, $\beta = -0.13$, $t(189) = -1.85$, $p > 0.05$, indicating a full mediation by implicit bias (see Figure 3). A bootstrap procedure with 5,000 bootstrapped samples was conducted. The bootstrapped indirect effect did not include zero (95% CI [-0.370, -0.069]), indicating a significant indirect effect of emotion (fear) on creativity ratings through implicit biases. Experiencing fear led to a higher implicit bias, resulting in lower ratings of creativity. Therefore, Hypothesis 4 was supported.

DISCUSSION

This study complements the existing studies on creativity by examining the recognition of creativity, rather than the

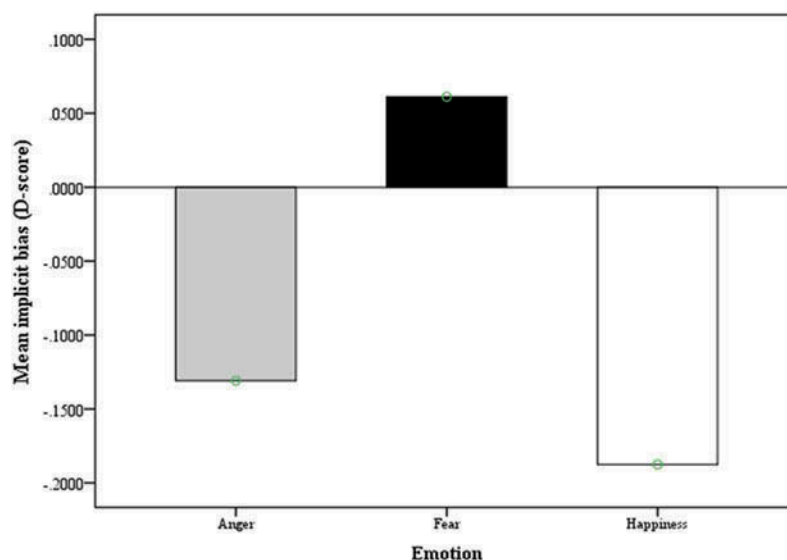


FIGURE 1 Mean implicit biases for the anger, fear, and happiness conditions.

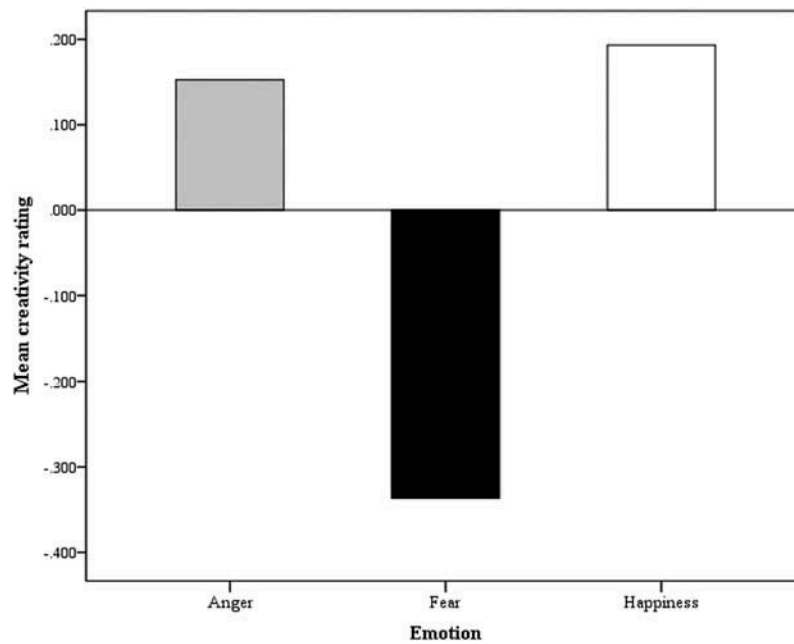


FIGURE 2 Mean creativity ratings for the anger, fear, and happiness conditions.

Note: Creativity rating was the variable reduced through principal component analysis.

TABLE 3
Mediating effect of implicit biases on the relationship between emotion and creativity ratings (CR)(N = 192)

Regression Paths	B	R ²	Bootstrap			
			Coefficient	SE	t	p
a path (emotion on implicit biases)	0.24**	0.12**	0.22	0.07	3.39	0.001
b path (implicit biases on CR)	-0.38**	0.12**	-0.85	0.16	-5.42	0.001
Total effect, c path (emotion on CR; no mediator)	-0.21**	0.08**	-0.45	0.15	-3.02	0.003
Direct effect, c' path (emotion on CR including implicit biases as mediator)	-0.13	0.20**	-0.27	0.14	-1.85	0.066

Note. Openness to experience was controlled. The total number of participants was 192. * $p < 0.05$, ** $p < 0.01$

generation of creative ideas. Drawing on earlier findings (Mueller et al., 2012, 2014), this study further demonstrated that people's implicit biases against creativity diminish their ability to recognize creativity. Moreover, as suggested by the appraisal model of emotion, the results showed that emotions with a high uncertainty appraisal, such as fear, tend to induce implicit (but not explicit) biases against creativity, thereby decreasing the evaluation of creativity. By contrast, emotions with a low uncertainty appraisal,

such as anger and happiness, did not show such negative implications toward creativity recognition. The following paragraphs highlight the implications of the study and discuss its limitations that inform the directions for further research on creativity evaluation and recognition.

Theoretical Implications

This analysis reveals that, compared to anger and happiness, fear characterized by a high uncertainty appraisal activated greater implicit biases against creativity after controlling for relevant individual dispositions such as openness to experience. On the other hand, anger and happiness, both characterized as low-uncertainty emotions (Smith & Ellsworth, 1985), exhibited similar effects on participants' implicit biases against creativity despite their opposite valence. These patterns indicate that individual attitudes toward creativity and subsequent evaluations of creative ideas can be explained better by the uncertainty, rather than the valence, appraisal dimension of the experienced emotion (cf. Mueller et al., 2012).

This analysis underscores the utility of the appraisal model of emotions (Ellsworth & Scherer, 2003) in explaining individuals' attitudinal and behavioral reactions in the context of creativity evaluation. It further highlights the importance of identifying the critical appraisal dimension in accordance with the target attitude or behavior in question. Most early studies examining affective influences on creativity have resort to the valence dimension of emotions (Baas, De Dreu, & Nijstad, 2008; Davis, 2009). The study highlights the significance of

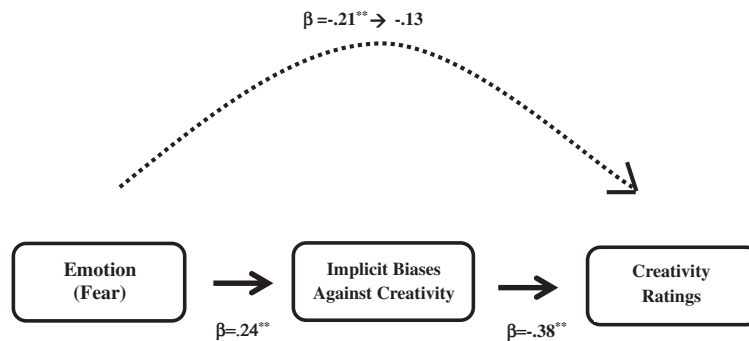


FIGURE 3 Mediation model.

Note: Emotion: 0 = Anger condition + Happiness condition; 1 = Fear condition.

directly attending to the uncertainty appraisal dimension, rather than assuming that negative emotions are associated with risk avoidance, particularly related to attitudes toward and recognition of creativity. Future studies should further elaborate on the distinct roles of emotions with different appraisal dimensions (e.g., valence, uncertainty, and control) related to idea generation, idea evaluation and selection, and idea implementation, which comprise different stages of creativity and innovation (Anderson et al., 2014).

The results also confirmed the hypothesized mediating effect of implicit biases against creativity on the relationship between experienced emotions and creativity ratings. Participants who experienced fear provided significantly lower creativity ratings because of their stronger implicit biases against creativity as compared to those experiencing anger and happiness. Fear entails uncertainty, thus increasing pessimistic evaluations of one's circumstances, including creative ideas presented, which seems consistent with previous findings that fear engenders a pessimistic view of the situation whereas anger promotes an optimistic assessment (Foo, 2011; Lerner & Keltner, 2001). The mediation model of this study indicated that lower ratings of creativity in the fear condition were influenced by implicit biases against creativity, which interferes with one's ability to acknowledge creative ideas (Mueller et al., 2012).

Notably, the significant effects of emotions on attitudes toward creativity and creativity ratings were observed only for the implicit measure of biases using IAT but not for the explicit measure using self-reported scales. Apparently, participants suppress the function of emotional experiences in eliciting negative attitudes toward creativity to maintain their favorable self-image in accordance with social desirability pressures (Greenwald & Banaji, 1995). Individuals might deny any unacknowledged aversion to creativity, assuming the existence of a genuinely positive attitude toward creativity (Mueller et al., 2012). Nonetheless, this analysis demonstrates the discrepancy between implicit versus explicit biases toward creativity, in which individuals who experience emotions with uncertainty appraisal developed biases against creativity

unknowingly even though they still believe that they favor creativity. Given this finding that emotions tend to affect creativity recognition through somewhat unconscious processes not recognized by individuals, further studies must continue to employ both implicit and explicit measures to reveal the dark side of creativity evaluation and idea acceptance.

Practical Implications

These results demonstrated that people hold ambivalent attitudes toward creativity that can be affected by emotional experiences. Specifically, participants with anger and happiness showed implicit positive attitudes toward creativity, whereas participants experiencing fear exhibited implicit negative biases against creativity. Considering the critical role of the uncertainty appraisal associated with emotional experiences, organizations and managers should attend to the levels of situational and contextual uncertainty to encourage positive attitudes toward and recognition of creative ideas in the workplace. With the presence and perception of uncertainty, employees may become resistant to novel ideas (mostly unknowingly) and fail to spot promising innovative solutions with substantial potential to improve performance (Mueller et al., 2014). For this reason, managers should identify and remove potential factors that cause uncertainty in the workplace such as role ambiguity, ambiguous and often unfair performance evaluation, and political climate. Similarly, an extensive use of pay for performance and meritocracy in the workplace may introduce uncertainty to employees because of unpredictable income and reduced job security (Du & Choi, 2010).

This study suggests that situationally triggered emotions in the workplace may result in implicit, rather than explicit, biases against creativity, thereby resulting in rejections of valuable creative solutions because of prejudice against risk and uncertainty (Tyagi et al., 2017). Strong normative pressure in support of creativity develops in contemporary organizations because of fast-changing market demands and

technological advancement (cf. procreativity bias). Nonetheless, managers and employees may unconsciously develop implicit biases against creativity and side with unoriginal and practical options, even though they explicitly state their encouragement of creative ideas (Berg, 2016; Mueller et al., 2012). Encountering uncertainty in the environment that requires creative solutions, employees can develop implicit biases against creativity, thereby blocking them from recognizing and utilizing creative ideas (Foo, 2011). In managing this paradox of uncertainty in relation to the need for and recognition of creativity, this study underscores the importance of managing emotional states among employees or the overall affective tone of the organization, which can change employees' implicit biases against creativity. As emotions are highly contagious (Sy & Choi, 2013), managers should display and spread emotions with high certainty appraisals to their peers and followers to reduce biases and prejudice against creative ideas.

Limitations and Directions for Future Research

A few limitations of this study should be noted. First, as this study is a laboratory study based on a sample of university students, the results might not necessarily be generalized to organizations or a wider segment of the population. The emotions individuals experience are not always clearly distinguishable, and various emotions can be experienced simultaneously. In addition, the size of an effect facilitated by situation-elicited feelings within an experimental setting may not be similar to how emotions are actually generated and influence attitudes and behaviors in work settings. Therefore, a field study should be conducted using employee samples (perhaps in a longitudinal framework) to assess the effects of situation-derived emotions on attitudes and recognition of creativity in the workplace.

Second, the study did not directly test the extent to which participants perceived uncertainty as being associated with their emotions. Future studies should confirm whether the effects of emotions on implicit attitudes are due to the associated appraisal dimensions such as uncertainty. In addition, if biases against creativity result from the perception and avoidance of uncertainty, further studies may investigate motivational tendencies related to uncertainty (e.g., need for cognitive closure or achievement goal orientations) along with emotional experiences.

Finally, this study did not include the positive emotion with a high uncertainty appraisal (i.e., hope) because of the difficulty in reliably eliciting this specific emotion in an experimental setting. Certain positive emotions (e.g., joy or happiness) could be reliably manipulated and elicited, but others (e.g., hope and gratitude) could not be elicited with sufficient clarity and distinctiveness because of simultaneous activation of several related emotions (Bednarski, 2012). Further research must employ additional methods to elicit the full set of emotions or

assess situational emotions in the workplace to determine whether the effect of hope is similar to that of fear.

This study complements the creativity literature with a focus on the receiving side, rather than the generation of creative ideas. The sociocultural forces (beyond the individual) that influence individual sense-making of the situation and corresponding emotions may play a critical role in accepting creative ideas. Although people explicitly acknowledge the need for creativity in their organizations, they tend to simultaneously and implicitly dislike and reject creative ideas. In addition to new theoretical insights connecting the emotion and creativity literature, this study helps practitioners to select the adequate context and assists individuals in properly evaluating and recognizing creativity to accrue benefits to the organization.

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