Creative Self-Efficacy as Moderator of the Influence of Evaluation on Artistic Creativity

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The study explored the effects of different evaluation styles (i.e., expected evaluation, feedback evaluation) and creative self-efficacy on artistic creativity. Previous research regarding the effect of external evaluation on creativity is inconsistent and inconclusive. In addition, in the case of evaluation, those who have different creative self-efficacy level are more likely to have different creativity performance. Thus, the moderating effects of creative self-efficacy (CSE) were hypothesized. Two experiments were designed. In study 1, two independent variables (CSE, expected evaluation) were manipulated with a 2 CSE (high, low) × 2 expected evaluations (have, no) between subjects design. Results revealed that expected evaluation restrained the participants' performance on artistic creativity, and it was significant only on the dimension of likeability and creativity, if the participant had a low CSE. However, for the high CSE students, this effect was not significant. Regardless of expected evaluation, their artistic creativity was superior to low CSE group. So study 1 showed that the creative self-efficacy has the moderator for the effects on the influence of evaluation on creativity. In study 2, a between-subjects design with 4 feedback types (positive informational, positive controlling, negative informational, negative controlling) and 2 CSE levels (high, low) was used. The results indicated that the influence of feedback evaluation styles on artistic creativity was significant on the dimensions of originality, and overall creativity. It was significant only on the dimension of originality, if the participant had a high CSE. In addition, the creativity score from high to low was as follows: negative informational feedback, positive informational, negative controlling, and positive controlling. However, for the low CSE students, this effects was not significant. So study 2 showed that the creative self-efficacy also has the moderator for the effects on the influence of evaluation on creativity only on the dimension of originality.

Creativity is often viewed as domain-specific, with differences among the arts,
mathematics, music, science, and so on. The domain specific approach to creativity is consistent with theory and research (Baer, 2011; Runco, 2014). It is consistent with recent China educational reforms and has important implications for education. The present study specifically focused on artistic creativity in the visual arts, and in particular, on drawing and collage-making (Amabile, 1982; Niu & Sternberg, 2001, 2003; Yi, 2012). Artistic creativity refers specially to the creativity expressed in any aspect of the arts, including visual art, music, literature, dance, theatre, film, and mixed media (Alland, 1977).

Several contextual and individual factors, such as, psychosocial work environment and personality, influence creative performance. One critical educational issue surrounds the impact of extrinsic constraint on creative effort. The educational setting lends itself to extrinsic evaluations (e.g., teachers grading papers, schools selecting criteria for progress and advancement) and tends to relegate autonomy and intrinsic interests. This is problematic because external constraints, such as competition, expected evaluation, contingent reward, surveillance, and time pressure, tend to inhibit creativity by diminishing intrinsic motivation (Amabile, 1983; Amabile & Gryskiewicz, 1987). These various results can be interpreted in terms of cognitive evaluation theory (Deci & Ryan, 1985). The theory points that the presence of a salient reword or external constraint can induce a change in the perceived locus of causality from internal to external, resulting in decreased intrinsic motivation.

However, the effect of extrinsic evaluations on creativity may be different for each individual. Deci and Ryan (1985) posits that there are two psychological antecedents of intrinsic motivation: perceived competence and self-determination. According to social cognitive theory (Bandura, 1986), the self-efficacy mechanism also plays a central role in human agency and self-motivation. Creative self-efficacy influences decisions regarding creative behaviors to undertake, the amount of effort and the persistence level when encountering challenges. So Tierney and Farmer (2002) proposed that creative self-efficacy may be a necessary precursor of creative effort.

So based on the above all, the current research investigated the impact of evaluation and creative self-efficacy on artistic creativity of students. In the context of artistic creativity, “evaluation” refers to comparisons of efforts and the artistic process with expectations, norms, and standards. According to cognitive evaluation theory, all external events can be viewed as having two functional aspects: a controlling aspect and an informational or feedback aspect. The present investigation concentrated on expected evaluation and feedback evaluation (i.e., informational and controlling).

The influence of expected evaluation on creativity
Quite a bit of research indicates that the imposition of an extrinsic constraint upon performance of an activity can lead to decrements in creativity. (Amabile, 1979; Amabile, Goldfarb, & Brackfield, 1990). Heyman and Dweck (1992) found that the creativity performance was reduced when subjects were told that their artwork would be evaluated (also see Bartis, Szymanski, & Harkins, 1988). The explanation for these findings is usually related to task motivation. Hennessey (2003) put it this way: the negative effect is due to the declining of the interest of creative activity. Generally, individuals who expect their work to be evaluated shift their focus from the intrinsic motivation of the task itself to an extrinsic motivation of receiving a good evaluation. This change in motivation results in lowered creative output, since a central aspect of
creativity, in addition to relevant skills, is an intrinsic motivation to engage in the task itself (Amabile, 1996). Cognitive evaluation theory also proves this point.

On the basis of the above arguments and evidence, we predict:

**Hypotheses 1.** Artistic creativity performance of expected evaluation participants would be lower than those of unexpected evaluation participants.

Yet Miller (2007)'s study did not find the predicted effect of expected evaluation, which did not replicate the findings of most previous research (Amabile, 1979). Miller explained that extrinsic motivation may not always be considered detrimental, under certain situations or with certain individuals, with extrinsic and intrinsic forces combining in an additive fashion (Hennessey and Amabile, 1988). What's more, expected evaluation may sometimes have a positive influence on creativity (Harackiewicz et al., 1991; Jussim et al., 1992; Shalley, 1995). Indeed, Shalley (1995) found that there is no negative influence on immediate performance, and in some cases it even has a positive impact. Specifically, she found that individuals who had a creativity goal and worked alone under the expectation of evaluation had the highest levels of creativity. Further, Shalley (2001) explored the effect informational and controlling expected evaluation on creativity. Results showed that individuals had significantly higher creativity in the condition of informational evaluation. Hence, the impact of expected evaluation on creativity is as of yet uncertain.

In addition, different from all research above which focused on the effect of expected evaluation on creativity products, Zhou (2008) explored the effects on two parts of the creative idea production process (i.e., variation and selective retention) and on final product creativity. Results revealed that expected evaluation have different effects on different part. During variation, individuals generated fewer numbers of ideas when anticipating expected external evaluation. On the other hand, during selective retention, individuals had more appropriateness idea, if they anticipated expected external evaluation. And, individuals produced the most creative ideas when he had expected evaluation only during selective retention. These results provide a possible explanation for the inconsistent findings documented in the literature.

**The influence of feedback evaluation on creativity**

Most previous research indicates that the expected evaluation has the effect on creativity. Given this, what are the effects when individuals were truly feedback evaluated according to their own performance? Indeed, it is also still being debated. Over the years, researchers have studied many types of feedback. According to cognitive evaluation theory, situational factors can affect intrinsic motivation through two aspects, a controlling and informational aspect, which influence how individuals judge their competence and self-determination on a task. So in this study I defined feedback style as the informational or controlling manner in which competence feedback is delivered (Ryan, 1982). Informational feedback style signals that evaluation will provide information to improve performance, controlling feedback style indicates that gauge how well one performs relative to a set standard. In the case of a creativity performance evaluation, the type or form of evaluation may have different effects on students' perception of whether the informational or controlling evaluation.

Some previous studies have suggested the importance of examining the effects of informational and controlling feedback styles on creativity. For example, Ryan (1982) gave participants positive feedback delivered in either an informational or a controlling style. The result that participants in the informational style condition received feedback
indicated they did well. Ryan reasoned that demanding that the participant "should" do well made the participant show lower intrinsic motivation than the participants who received the feedback in an informational style. Zhou (1998) examined the interactive effects of feedback valence, feedback style, and achievement orientation and task autonomy on creative performance. Results showed that individuals who received feedback delivered in an informational style exhibited greater creativity than those who received feedback delivered in a controlling style. And providing a high task autonomy condition together with positive feedback and an informational feedback style can result in even greater facilitative impact on creativity. Thus, we predict:

**Hypotheses 2.** Artistic creativity performance of informational evaluation participants would be higher than those of controlling evaluation participants.  

**The Creative Self-Efficacy (CSE)**  
Bandura (1986) proposed self-efficacy through the frame of social cognitive theory. And, self-efficacy reflects the general beliefs of individual in their abilities across domains (Chen, Gully, & Eden, 2001). To study creativity performance, which implies novel and valuable outcomes, Tierney and Farmer (2002) developed specific self-efficacy, namely creative self-efficacy, to judge capacities in a narrow domain. And defined self-efficacy as follow: Creative self-efficacy as a self-judgment of one's imaginative ability and perceived competence in generating novel and adaptive ideas, solutions, and behaviors. It is reflected in one's belief about ability or potential within a domain.  

Several investigations have proved the assertion that creative self-efficacy is related to creative performance. In an early study, Schack (1989) concluded that creative self-efficacy was a significant predictor of students' initiation of independent projects. Similarly, Tierney and Farmer (2002), who included two samples of employees from a manufacturing division and an operation division, found that creative self-efficacy significantly predicted supervisors' ratings of employee creativity. A similar relationship was found in a study involving an R&D unit of a chemical company (Tierney & Farmer, 2004). The similar results were also seen in Beghetto's study (2006). It examined correlations of creative self-efficacy in middle and secondary students. Results showed that students' mastery-and performance-approach beliefs and teacher feedback on creative ability were positively related to students' creative self-efficacy. Creative self-efficacy was also linked to student reports of their teachers not listening to them and sometimes feeling that their teachers had given up on them. Besides, Choi's research (2004) also proved that the positive relationship existed between undergraduate students' creative self-efficacy and teachers' evaluations of the students' creative performance. Finally, in a recent study, Carmeli and Schaubroeck (2007) demonstrated that creative self-efficacy predicted self-reported creative work involvement in a sample of two financial service organizations in Israel. Thus, findings from both a school context and a work context indicate that creative self-efficacy is an important precursor of creative effort and performance. Moreover, Choi (2004) also found that creative self-efficacy completely mediated the effects of individual (personality, ability, and motivation) and contextual (social influences from leaders and peers) variables. The discovery represents that creative self-efficacy plays a vital role in explaining how, and why, specific individual and contextual variables are related to creative performance. The finding affords us lessons that merit attention for the current research. Therefore, I have the hypotheses as follows:
Hypotheses 3. Creative self-efficacy would moderate the effect of evaluation on artistic creativity.

The present investigation extended this line of work by examining the moderating effect of creative self-efficacy on the influence of evaluation on artistic creativity. Two empirical studies were conducted to examine the moderating effects of creative self-efficacy on the relation between evaluation and artistic creativity. First a pilot study revised the creative self-efficacy Scale such that it could be used for research with students and on artistic creativity. Study 1 used the new scale to explore the effect of expecting evaluation on artistic creativity. Study 2 explored the effect of the feedback evaluation on artistic creativity.

PILOT STUDY

METHOD

Measure and Procedure
The students' creative self-efficacy scale was used to assess perceived beliefs about the ability to produce novel and appropriate ideas, works, or productions. It was developed by Taiwanese scholars Hong and Lin (2004), which included statements about perceived efficacy in thinking strategy, producing works, and contending negative evaluation. The 17 items creative self-efficacy was revised to be suitable for students from China mainland. The self-efficacy scale was scored on a four-point scale ranging from 1 (disagree completely) to 4 (totally agree). Data for the pilot was collected from 340 junior school students, recruited on a voluntary basis. 316 effective questionnaires were back.

Results
Item-to-total correlations were examined to assess relationships of each variable to the overall scale. One item of the creative self-efficacy scale was deleted due to correlations below the .30 level in the item-to-total correlations. Confirmatory factor analysis (CFA) was used to with LISREL 8.70 to examine the factor structure of the formal scales. Five items of the scale was deleted due to the factor loading below .30 level. Therefore, 11 items were retained for the revised scale (e.g., "I am certain that I can produce refreshing products": see Appendix). For the students' creative self-efficacy scale, \( \chi^2(41)=52.48, \) RMSEA= .03, CFI= .99, GFI= .97, AGFI= .95, IFI= .99, NFI= .95. The standardized estimates of factor loading for the constrained model ranged from .34 to .64 for the creative self-efficacy scale, respectively. Generally, values of CFI, GFI, AGFI, IFI, and NFI greater than .90 and RMSEA less than .07 indicate adequate fit (Byrne, 1994). Reliability analyses showed that the Cronbach's alpha were .719 for all items, it showed that the internal consistency of the whole scale was good. Therefore, the modification of the edition has good construct validity and reliability, and the students' creative self-efficacy scale could be used as moderator, as described in the Introduction, above.

STUDY 1

Exploring the effect of expected evaluation on artistic creativity

Design
Two independent variables (creative self-efficacy, expected evaluation) were manipulated
in the experiment with a 2 creative self-efficacy (high, low) × 2 expected evaluations (have, no) between subjects design.

**Participants**

Participants for the study were in grade one from some secondary school in Shaanxi Province in China. By random sampling, 96 students from three classes completed students' creative self-efficacy scale. The mean age of students was 14 years and up (14+). They were categorized into two groups: high creative self-efficacy group and low creative self-efficacy group, according to the median score of students' creative self-efficacy scale. Each group of students was randomly assigned to each of the two evaluation conditions. Finally, 44 students (19 low creative self-efficacy, 25 high creative self-efficacy group) would be anticipant expected evaluation, and 47 students (24 low creative self-efficacy, 23 high creative self-efficacy group) would have unexpected evaluation.

**Materials**

*Students' creative self-efficacy Scale.* The scale had been revised in the study and the retest reliability was .88.

*Artistic creativity assessment tasks.* The tasks we used to assess artistic creativity were making a collage, as exemplified by Teresa Amabile's (1982) series of studies about the influence of social condition on artistic creativity. The dependent variable of creativity was measured with a 30-min collage-making task. Each collage was assigned a creativity score from a set of independent expert raters that were blind to condition. To assess creative performance, the "Consensual Assessment Technique (CAT)" research paradigm developed by Amabile (1996) was utilized.

**Procedure and experimental treatments**

After receiving consent from the participants, the materials for the experiment were given participants. Each student received an identical set of stickers with different shapes, colors, and sizes and was asked to select one topic from three given topics (namely, "happiness", "my home", and "my dream") to make a collage design to represent that topic. According to the above group, 19 participants of high creative self-efficacy group and 25 participants of low creative self-efficacy group were told that their artworks would be evaluated, and the remaining participants were not.

**The instruction for evaluated students to make collage designs was:**

"We would like to ask you to help us by making a collage design. Please select one topic you are interested in from the following three topics, and make a collage to represent this topic. Feel free to use the materials we provided; you can use as much or as little material as you like in your design, but please use only these materials. You have 30 minutes to complete this project. Our purpose for collecting these designs is to compare and evaluate your artistic creativity. After completing your collages, the judges then rated all of the collages for creativity and publish the results."

Your choice of topics is: Happiness, My Dream, and My Future.

(Mark the one you want to describe.)
The instruction for no-evaluated students to make collage designs was:

"We would like to ask you to help us by making a collage design. Please select one topic you are interested in from the following three topics, and make a collage to represent this topic. Feel free to use the materials we provided; you can use as much or as little material as you like in your design, but please use only these materials. You have 30 minutes to complete this project. Our purpose for collecting these designs is to gather data, no scoring and no evaluated, the results will be kept in secret."

Your choice of topics is: Happiness, My Dream, and My Future.

(Mark the one you want to describe.)

Judges and judging process
Seven trained psychological graduate students judged the collages. Judges were told that all the designs had been made by some first-grade middle school students in 30 minutes, who all used the same materials. Judges were then instructed to evaluate subjectively all of the artworks for the following four aspects: overall creativity (the degree to which the design is creative), likeability (the degree to which you like it), appropriateness (the degree to which the design represents this topic), originality (the degree to which the design is novelty, but valuable). The dimensions used to judge artistic creativity were made by reference to Niu and Sternberg's (Niu & Sternberg, 2003). The judges were instructed to evaluate all artworks relative to one another on each aspect on a 7-point scale. They were asked to look at all the artworks before they started their evaluating. All of this is consistent with the standard CAT methodology (Amabile, 1996).

Results
Inter-judge reliabilities
Before conducting any hypothesis testing, an inter-judge reliability assessment was needed to determine whether the subjective judgments were at an acceptable level or not. Inter-judge reliabilities were measured using Cronbach's coefficient alpha (standardized), calculated using SPSS16.0. For the group of judges, four reliability coefficients were calculated for each of the four dimensions (overall creativity, likeability, appropriateness, and originality) of the collage task. The four reliability coefficients for the creativity evaluations of the artworks were .65~.75.

The effect of expected evaluation
A MANOVA was used to examine whether the manipulations were effective. In the 2 (creative self-efficacy) × 2 (expected evaluation) MANOVA, the main effect of expected evaluation and creative self-efficacy on most dimensions were significant. See Table 1 for specific statistics, including effect sizes.

The main effect of expected evaluation: to Appropriateness $F_{(1,87)} = 4.24, p < .05$; to Likeability $F_{(1,87)} = 8.37, p < .01$; to Creativity $F_{(1,87)} = 6.60, p < .05$ (See Table 1), showing that the impact of the expected evaluation differed for the artistic creativity. According to the Table 1, for the each dimension of creativity, the mean score of evaluation group is lower than the mean score of no-evaluation group, indicating that expected evaluation can inhibit the artistic creativity.
Table 1

Results of MANOVA: Effects of Expected Evaluation And CSE on All Dimensions of Art Creativity (Mean, F Values and Effect Size, \( \eta^2 \))

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<td><strong>Excepted evaluation</strong></td>
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<td>No</td>
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<td>3.44</td>
<td>3.88</td>
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<td>3.3</td>
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<td></td>
<td>4.24*</td>
<td>8.37**</td>
<td>2.18</td>
<td>6.60*</td>
</tr>
<tr>
<td>Partial ( \eta^2 )</td>
<td>0.05</td>
<td>0.09</td>
<td>0.02</td>
<td>0.07</td>
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<tr>
<td>Have</td>
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<td></td>
<td>3.27</td>
<td>3.68</td>
<td>3.18</td>
<td>3.2</td>
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<td></td>
<td>3.46</td>
<td>3.9</td>
<td>3.42</td>
<td>3.44</td>
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<tr>
<td></td>
<td>6.07*</td>
<td>12.05***</td>
<td>8.62**</td>
<td>9.69**</td>
</tr>
<tr>
<td>Partial ( \eta^2 )</td>
<td>0.07</td>
<td>0.12</td>
<td>0.09</td>
<td>0.1</td>
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<tr>
<td><strong>CSE</strong></td>
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<tr>
<td>Low CSE</td>
<td>M</td>
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<td></td>
<td>4.40*</td>
<td>7.58**</td>
<td>4.93*</td>
<td>4.90*</td>
</tr>
<tr>
<td>Partial ( \eta^2 )</td>
<td>0.05</td>
<td>0.08</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>

**Note.** Appr=appropriateness; Like=likeability; Orig=originality; Creat=overall creativity; CSE=Creative self-efficacy; *\( p < .05 \), **\( p < .01 \), ***\( p < .001 \)

The main effect of creative self-efficacy for appropriateness \( F(1,87) = 6.07, p < .05 \); likeability \( F(1,87) = 12.05, p < .001 \); originality \( F(1,87) = 8.62, p < .01 \); creativity \( F(1,87) = 9.69, p < .01 \) (See Table 1), suggesting that the degree of creative self-efficacy has influence on artistic creativity. According to the table 1, for the each dimension of creativity, the mean score of high creative self-efficacy group is greater than the mean score of low creative self-efficacy group, showing that high creative self-efficacy is benefit to the artistic creativity.

The significant interaction on all dimensions between expected evaluation and creative self-efficacy were also found for appropriateness \( F(1,87) = 4.40, p < .05 \); likeability \( F(1,87) = 7.58, p < .01 \); originality \( F(1,87) = 4.93, p < .05 \); creativity \( F=4.90, p < .05 \) (See Table 1), indicating that the impact of the expected evaluation on creativity was different on different degrees of creative self-efficacy. These results also confirm that the creative self-efficacy had a moderating effect between the relation between evaluation and creativity.

**The simple effect analysis of the artistic creativity on all dimensions:**

The simple effect analysis was used to analyze how to influence on the interaction of expected evaluation and creative self-efficacy on the artistic creativity. Table 2 show that the effect of excepted evaluation to the artistic creativity in two creative self-efficacy levels is different. The simple effect in the low level was significant on all
dimensions: appropriateness $F_{(1,87)} = 6.67, p < .05$; likeability $F_{(1,87)} = 11.42, p < .001$; originality $F_{(1,87)} = 4.83, p < .05$; creativity $F_{(1,87)} = 8.34, p < .01$ (See Table 2), and there was no significant effect in high level, suggesting that, expected evaluation only had the impact in low creative self-efficacy level. In low creative self-efficacy level, the mean of excepted evaluation students were all lower than the others who had no-excepted evaluation (See Table 2).

**Table 2**

Results of the Simple Effect Analysis of Evaluation And No-evaluation

<table>
<thead>
<tr>
<th></th>
<th>Low CSE</th>
<th></th>
<th>High CSE</th>
<th></th>
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<tbody>
<tr>
<td>M</td>
<td>F</td>
<td>M</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Appr</td>
<td>3.43</td>
<td>6.67*</td>
<td>3.46</td>
<td>.01</td>
</tr>
<tr>
<td>Like</td>
<td>3.86</td>
<td>11.42***</td>
<td>3.90</td>
<td>.00</td>
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<tr>
<td>Orig</td>
<td>3.32</td>
<td>4.83*</td>
<td>3.42</td>
<td>.37</td>
</tr>
<tr>
<td>Crea</td>
<td>3.38</td>
<td>8.34**</td>
<td>3.44</td>
<td>.03</td>
</tr>
</tbody>
</table>

*Note. *$p < .05$, **$p < .01$, ***$p < .001$

The results revealed that expected evaluation restrained the participants' performance on artistic creativity, if the participant had a low creative self-efficacy. However, for the high creative self-efficacy students, this effect was not significant. Regardless of expected evaluation, their artistic creativity was superior to low creative self-efficacy group.

**STUDY 2**

Exploring the effect of feedback evaluation on artistic creativity

**Design and Participants**

A between-subjects design with 4 feedback types (positive informational, positive controlling, negative informational, negative controlling) and 2 creative self-efficacy levels (high, low) was used. By random sampling, 261 junior middle school students who were chose from a secondary school in Shaanxi Province of China participated in the experiment. Participants were measured by the Students’ creative self-efficacy Scale, and 246 scales were returned and analyzed. According to the scores, students were categorized into two groups (high creative self-efficacy group, and low creative self-efficacy group). High creative self-efficacy group students were randomly assigned to 1 of the 4 feedback styles/conditions, the same as the low creative self-efficacy group students.

**Material and Procedure**

In this Study, the students’ creative self-efficacy scale and artistic creativity assessment tasks (collage-making) were still used, as the same as study 1.

The procedure was adapted from Ryan’s (1982) research. Study 2 consisted of pre-test and post-test. In pre-test, all of students accepted the same artistic creative test, a 30-min collage-making task. Their choice of topics is: Happy, Sad, Angry, Frightened, circle the one they want to depict. After receiving all creative products, experimenters
told the participants that these artistic products will be evaluated and scored, and the results will be published.

In the next day, the post-test was carried out at the same time, students of four feedback styles were accepted different comments respectively as follows:

Positive informational (Po-infer): "You did really well. Congratulations! Keep up the good work."

Negative informational (Ne-infer): "You didn't do very well, sorry."

Positive controlling (Po-contr): "You did very well, just as you should. But remember, you must keep up your creativity at this level so that we can use your data."

Negative controlling (Ne-contr): "You did very poorly. This should not have happened. Remember, you should not repeat the poor performance or we can't use your data."

Then all students accepted the same artistic creative test, a 30-min collage-making task. Their choice of topics was: Happiness, My Dream, My Future. Their artworks were evaluated using the Consensual Assessment Technique, with the 7 judges employed in Study 1.

Results

The effect of feedback evaluation

T-tests were used to test the effect of evaluation styles. Several dimensions of artistic creativity among different evaluation types were significant. Respectively, originality \( t = -3.83, p < .001 \) and overall creativity \( t = -3.94, p < .001 \) were clearly significant. Appropriateness, likeability was not significant. Thus evaluation had an influence on the participants' creative potential in post-test on the dimensions of originality, and overall creativity. The next step explored the effect of evaluation on these two dimensions.

Inter-judge reliabilities were also measured using Cronbach's coefficient alpha (standardized), calculated using SPSS16.0. The four reliability coefficients for the creativity evaluations of the artworks were .70~.76, and all of the reliability coefficients were acceptably high. In post-test MANOVA was used to analyze to examine whether the manipulations were effective. In the 2 (creative self-efficacy) × 4 (evaluation styles) MANOVA, the main effect of evaluation styles and CSE on most dimensions were significant.

The main effect of evaluation styles were significant for likeability, originality, and overall creativity, \( F(3,238) = 5.06, p < .01; F(3,238) = 4.02, p < .01; F(3,238) = 2.75, p < .05 \), respectively (See Table 3), showing that the impact of the evaluation styles differed for the artistic creativity. The significant main effect of CSE were found, originality \( F(1,238) = 5.97, p < .05 \); overall creativity \( F(1,238) = 10.29, p < .01 \) (See Table 3), suggesting that the degree of CSE has influence on artistic creativity.

The significant interaction between expected evaluation and creative self-efficacy was only found on the dimension of originality, \( F(3,238) = 2.71, p < .05 \) (See Table 3). The results further showed that the CSE had an impact on the effect of evaluation on creativity, at least for some dimensions.

The simple effect analysis of the overall artistic creativity

A simple effect analysis was used to further examine the interaction of evaluation styles and CSE on the artistic creativity.

Table 4 shows that there was only significant effect in high level for the dimension of originality, \( F = 5.69, p < .001 \). The mean of negative evaluation student (Ne-infer = 3.71, Ne-contr = 3.29) were greater than the others who had positive evaluation (Po-infer = 3.52, Po-contr = 3.24), and the mean of information evaluation students (Ne-
Table 3
Results of MANOVA: Effects of Evaluation Styles And CSE on All Dimensions of Art Creativity in Post-test (F Values and Effect Size, η2)

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<tr>
<td>Evaluation styles</td>
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<tr>
<td>Partial η2</td>
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<td>CSE</td>
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<td></td>
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</tr>
<tr>
<td>Partial η2</td>
<td>.02</td>
<td>.03</td>
<td>.03</td>
</tr>
</tbody>
</table>

*Note. *p < .05, **p < .01, ***p < .001

Table 4
Results of the Simple Effect Analysis of Four Evaluation Styles (F Values)

<table>
<thead>
<tr>
<th></th>
<th>Appr</th>
<th>Orig</th>
<th>Crea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low CSE</td>
<td>0.16</td>
<td>1.06</td>
<td>1.55</td>
</tr>
<tr>
<td>High CSE</td>
<td>2.39</td>
<td>5.69**</td>
<td>3.74</td>
</tr>
</tbody>
</table>

*Note. *p < .05, **p < .01, ***p < .001

infer = 3.71, Po-infer = 3.52) were greater than the others who had control evaluation (Ne-contr = 3.29, Po-contr = 3.24). The results revealed that different evaluation styles have different effect on the participants' performance on artistic creativity on the dimension of originality. For the originality of creativity, creative self-efficacy was a moderator variable between feedback evaluation and artistic creativity.

GENERAL DISCUSSION
The results of this study showed that artistic creativity was influenced by expected evaluation, but only for a group relatively low in creative self-efficacy. The influence of feedback evaluation styles on artistic creativity was only significant on the originality dimension of creativity, and only for the high creative self-efficacy group, suggesting a moderator for the creative self-efficacy effects on the artistic creativity.

The effect of expected evaluation
Expected evaluation was associated with the detail/complexity dimension of creativity in Study 1. The expectation of evaluation had significant effect on artistic creativity. Individuals who received expected evaluation exhibited lower creativity than those who has no evaluation, perhaps consistent with Amabile's (1979) analysis of evaluation as integrally related to trait creativity. The current study also replicated the findings of Heyman and Dweck (1992) and seems to be consistent with the result that participants felt less competent at the task under threat of evaluation (King & Gurland, 2007). Recall here that Hennessey (2003) held that expected evaluation decrease individual’s interest of creativity. Because feelings of incompetence undermine intrinsic interest (for a review, see Deci, 2005), the evaluation group took the artistic creativity as an exam which
made students feel more pressure. The no-evaluation group felt differently. These results lend additional support to the role of intrinsic motivation as more conducive to creative performance than motivations that focus on the external evaluation.

The effect of feedback evaluation
Study 2 examined the effect of the feedback styles on artistic creativity. The results showed the effect on the two dimensions of collage design were significant. Appropriateness was marginally significant, and likeability was not significant. Originality was the key to creativity (Runco & Jaeger, 2012), and its difference was significant, so further exploration was warranted. In the post-test, individuals who received feedback delivered in an informational style exhibited greater creativity than those who received feedback delivered in a controlling style. The current results replicate the findings of previous research (Zhou, 1998; Ryan, 1982). Consistent with Ryan's (1982) view, controlling feedback decreases participants' creative motivations because of the feeling of being controlled.

Several organizational researchers have argued that positive feedback is better than negative feedback for performance enhancement (Zhou, 1998; Ryan, 1982). The results of the present study were not consistent with such an argument. Individuals who received negative feedback exhibited greater creativity than those who received positive feedback, perhaps because it signals the gap between the current level of performance and the situational criteria (Podsakoff & Farh, 1989; Taylor, Fisher, & Ilgen, 1984). This is consistent with Gao and Ma's (2007) research that the effect of negative feedback is better than positive feedback. Nease (1999) found that individuals who receive negative feedback take some measures to minimize the discomfort, for example, try harder, or reduce their objectives, or refused to accept the feedback. It may be that most of participants who received negative evaluation were inclined to work harder to improve own ability, suggesting that creativity has relation to individuals’ abilities. This might explain why there is sometimes the circumstance that positive evaluation did not promote students' creative performance, but negative evaluation promote students' creative performance.

Creative Self-Efficacy
The current research investigated the possibility of an effect of creative self-efficacy on creative performance. Results indicate that high creative self-efficacy is more facilitative to creative performance than the low creative self-efficacy. The relation between creative self-efficacy and creativity was positive. The results replicated the findings of previous research (Tiernery & Farmer, 2002; Chen, 2006; Hong, 2004), suggesting that the degree of creative self-efficacy has an influence on artistic creativity. Ronald (2006) found that middle school students who has high creative self-efficacy exhibited more confidence and positive belief in their scientific achievement. The current results are consistent with that view. Students under evaluation who had high creative self-efficacy seemed to be inclined to work hard to achieve their own goals. However, someone with low creative self-efficacy may lack confidence to complete the task, especially under negative evaluation.

In Study 1, the significant interaction on all dimensions between expected evaluation and creative self-efficacy were found. The results revealed that expected evaluation restrained the participants' performance on artistic creativity, when creative self-efficacy was. However, for the high creative self-efficacy students, it was not relevant whether there were excepted evaluation or not; their artistic creativity was superior to low creative self-efficacy group. These results suggest that creative self-efficacy is a moderator of
expected evaluation and artistic creativity, as proposed by Tierney and Farmer (2002, 2004). In Study 2, the high creative self-efficacy individuals exhibited greater creativity than the low creative self-efficacy only on the dimension of originality when we have feedback evaluation on them. For the high creative self-efficacy group, feedback styles had a significant effect on artistic creativity, while the low creative self-efficacy had nothing. Thus there was a simple moderation for the effects on the artistic creativity. Practically speaking, schools would be well served promoting students’ appreciation of creativity, and their motives in creative thinking, including their interest, confidence, and values in creative thinking. This same conclusion may apply more broadly, as well. Creativity is an important construct in psychology, education, business, and beyond. Still, more research is needed to further investigate the idea that both intrinsic and extrinsic motivation can unite to reduce the negative impact for the evaluation in other laboratory and applied settings. More attention, in the classroom and in research, should be paid to students’ creative self-efficacy.

LIMITATION AND FUTURE DIRECTIONS

Like all field studies, our study has its limitations. First, this study did not use the traditional creative self-efficacy measure advocated by Tierney and Farmer (2002), which included statements about perceived efficacy in producing ideas, solving problems, and in elaborating or improving upon others' ideas. Rather, the students' creative self-efficacy scale, developed by Taiwanese scholars Hong and Lin (2004), was used to measure self-efficacy. Because the former was based on the participants from abroad, as yet, there is no researcher examining the cross-language equivalence to verify whether the theoretical construct of creativity self-efficacy is universal, but the latter is the similar to the language and cultural background of China mainland and a more recent Chinese study (Zhang, Wang, Chu, Xu et. al., 2011) has revised and examined the use of students' creative self-efficacy scale for measuring self-efficacy. The study found that students' creative self-efficacy scale was an acceptable alternative method of creative self-efficacy measurement in terms of predictive validity and reliability. However, future research might consider the use of a more international instrument to measure the creative self-efficacy, and discuss the cross-cultural differences.

Second, some limitations of this research concern external validity, since this is only one study conducted in the laboratory with junior school students. The laboratory experiment gives us the opportunity to manipulate and study the effects of external evaluation expectation in a clean and causal fashion. However, the extent to which the results can be generalized to field settings needs to be examined in future research.

What's more, creativity is complicated process, and the effect of evaluation on artistic creativity may be had by other contextual (i.e., stress, reward...) and individual factors (i.e., self-esteem, intrinsic motivation...). So future studies can explore other moderators or mediators of the effect, to further make clear the internal mechanism.

REFERENCES


Key words: Evaluation, Artistic creativity, Creative self-efficacy
APPENDIX

Students’ creative self-efficacy Scale

1. When I encounter a new problem, I believe that I can think several solutions to solve it as soon as possible.
2. When I encounter a difficult problem, I am certain that I could try a new solution to solve it.
3. When I encounter a challenging task, I am certain that I could associate many relevant knowledge.
4. When I am confronted with a difficult problem, I am confident that I always think out some unexpected answers.
5. I am certain that I can produce refreshing products.
6. I believed that my products would be more novel than others.
7. I think my works would be same as others’.
8. I think I have no idea the points which would make my products get more creative.
9. I am certain that I can fly my thinking with people strange eyes when it is necessary to think new solutions.
10. I still would hold my views even if others don’t appreciate my novel ideas.
11. I still try to solve problems in various ways even if teachers discourage the creative points.