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# How Copying Artwork Affects Students' Artistic Creativity

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## Abstract

30 undergraduates participated individually in a three-day-drawing experiment. It was explored whether an experience copying others' drawing facilitated subjects' artistic creativity. Results showed that drawings by subjects who previously had copied others' drawings were rated more creative than the drawings of subjects who had not copied. Two further analyses revealed how subjects could produce creative drawings. First, in the examination of constraint relaxation processes, subjects were initially constrained by a belief that they should draw things realistically. Then, they relaxed this constraint by means of copying abstract pictures. Second, according to protocols of the copying process, copying forced subjects to explore their original expression through a comparison with other artwork. It seemed that copying enabled them to generate new drawing ideas.

## Introduction

It is often said that people cannot produce original works through the imitation of others. In the domain of art, many art educators believe that copying others' work inhibits people's, particularly children's, artistic creativity. They claim that artistic expression should be as free as possible from copying (Lowenfeld, 1957). It is well known, however, that artists of impressionism created their original paintings by means of imitating Japanese prints, *Ukiyoe*. In addition, some famous painters, e.g., van Gogh and Picasso, created their original paintings through copying the work of old masters (Galassi, 1996; Homburg, 1996). The question of whether copying inhibits or facilitates creative art has been controversial among artists, art researchers, and art educators (Duncum, 1988).

In some modern cultures, including Japanese culture, many art lay people (i.e., nonartists) seem to think that representational and realistic paintings have higher value than other forms of painting. That may be due to the content and methods of art education in school settings. Especially in Japanese elementary and middle schools, students spend the majority of their time in art class sketching. This may lead them to believe that drawing is primarily to represent objects in the real

world on paper (Kozawa, 2001). In other cultures, it is also reported that people prefer realistic paintings to abstract or other types (Cupchik & Gebotys, 1988; O'Hare, 1976). Such beliefs might limit the range of students' means of expression. It is predicted that subjects would create new drawing styles if their constraints become relaxed. Therefore, we focused on copying others' work as a candidate for an intervention that could relax constraints and investigated its effect on creative drawing.

## Method

**Subjects.** 30 undergraduates participated in this study. None of them had special training in drawing since at least middle school.

**Experimental Design.** A three-day-experiment (pre-treatment-post design) was conducted. All of the subjects were initially required to create two original drawings in the pretest phase. In the treatment and posttest phases, subjects were divided into three groups. In the Experimental Group (EG), subjects were asked to copy two pieces of an artist's drawings, then to create their own original drawing. In the Reproduction Group (RG), subjects were also asked to copy, then to draw a new picture using the artist's style. In the Control Group (CG), subjects were asked to draw their own original drawings in every session.

**Materials.** Subjects were required to draw pictures using as subject matter the materials displayed in Table 1. A4-sized Kent paper and a black ballpoint pen were offered to subjects for each drawing. The pictures copied by subjects in the two groups were abstract paintings by a Japanese modern artist (Figure 1).

**Procedure.** Each subject participated individually in a three-day-experiment; one session per day, each lasting approximately 90 minutes. Subjects were asked to draw two pictures in each of the pretest and treatment phases. The second picture in each phase was presented three minutes after the first one was completed. In the posttest, subjects drew a picture and then were asked to

Table 1: Materials presented to subjects.

|             | Experimental Phases        |                             |                                               |
|-------------|----------------------------|-----------------------------|-----------------------------------------------|
|             | Pretest                    | Treatment                   | Posttest                                      |
| 1st drawing | a cocktail glass           | a shell (Venus Comb Murex)* | an orange and a shell (Common Spider Conch)** |
| 2nd drawing | a paprika and a pinecone** | a potted plant*             | -                                             |

\* For EG and RG, the pictures to copy were drawn with each of these materials by an artist and presented alongside the materials.

\*\* These sets of materials were counterbalanced among subjects.

complete a questionnaire (described later in detail) and were interviewed about their drawings. Thus, each subject drew five pictures in total during three days.

Subjects in CG were instructed as follows in all phases: "Draw your own ORIGINAL picture using this (these) material(s) as subject matter." Subjects in EG were instructed in the same way in the pre and posttest phases. But, they were told in the treatment phase: "A painter drew this picture using this material as subject matter. Please copy the picture onto a blank piece of paper while imagining the painter's intention." Subjects in RG were instructed in the same way as EG in the pretest and treatment phases. However, they were told in the posttest phase: "Recall the previous day's experience of copying a painter's picture and then draw a picture with these materials in the painter's style. How would you represent the subject matter if you were the painter?"

We asked subjects to talk aloud while drawing, and recorded their verbal protocols and behavior with three videocassette recorders. Except for this procedure, we placed upon the subjects' activities as few restrictions as possible in order to promote maximum spontaneity (e.g., They were not told explicitly that there was a time limit on their drawing).

## Results and Discussion

### Preliminary Analysis

In the posttest phase, drawings in RG were quite different from those in EG and CG in terms of content and number of elements in each picture (Figure 2). The

mean number of elements in a drawing was significantly greater in RG (23.8) than in EG and CG (10.2 and 5.4, respectively) [for group by phase interaction,  $F(2,27)=5.05$ ,  $p<.05$ ]. All drawings by subjects in RG consisted of much repetition of simple geometrical elements, but those by subjects in EG had no such characteristics. Thus, although subjects in EG

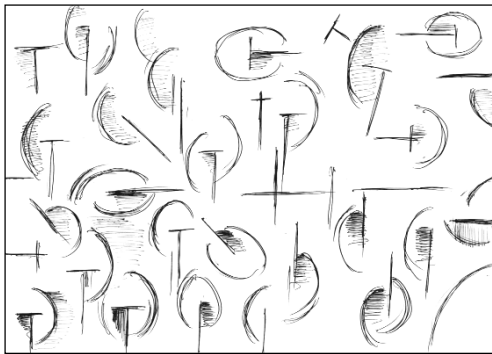
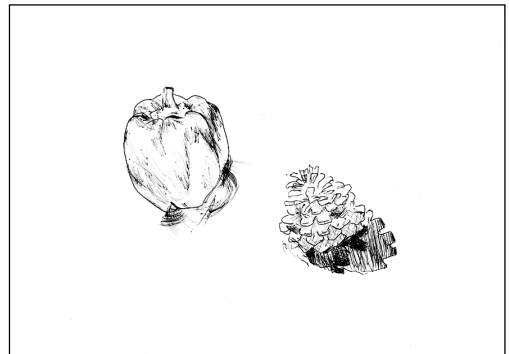
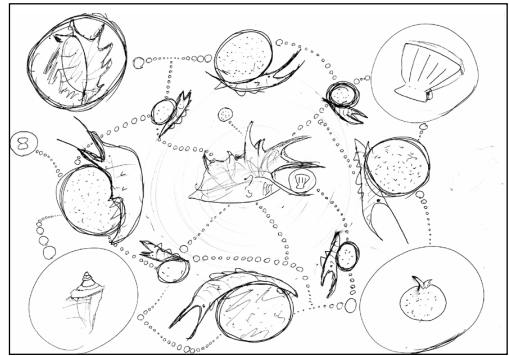


Figure 1: Example of the artist's drawings that subjects in the EG and RG saw.

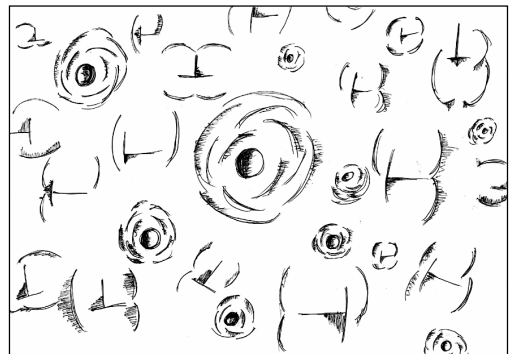


Figure 2: Examples of drawings in the posttest phase (EG; CG; RG, respectively from the top).

and RG copied pictures in the same manner, subjects in EG did not reproduce the artist's style of pictures, but created their own styles.

### Analysis of Products: Rating Creativity of the Drawings

In order to compare the creativity of drawings in EG with that in CG, a new scale was constructed that included three aspects of artistic creativity: six items of aesthetic attractiveness (e.g., "vitality of expression"); nine items of originality (e.g., "originality of her or his view or sense of value"); and two items of technical skills (e.g., "technical skill in picture composition"). Thus, in total, 17 items were included in the scale with all items ranging from 1 to 5. Because our critical question was to reveal whether or not the artistic creativity of subjects who copied others' art works was superior to that of subjects who did not copy, the comparison of the two groups would be sufficient to answer the question. Thus, we excluded the drawings by subjects in RG from this analysis.

Two professional modern artists separately rated subjects' pre and posttest drawings using the scale. They were not informed of which drawings belonged to which condition. A result of factor analysis with Principal Component Analysis showed that the scale has one factor construction and was adequate for the evaluating creativity of drawings (eigenvalues for the first three factor were 10.58, 2.06, and 1.05, and the first factor accounted for 62.2% of the total variance). Since the coefficient alpha for internal coherence was .96 for all 17 items, we regarded the simple sum of the 17 items as the creativity score for each drawing.

A three-way ANOVA (two experimental groups X two raters X two expositional ordering of drawing materials) was performed for post-pre subtracted scores.

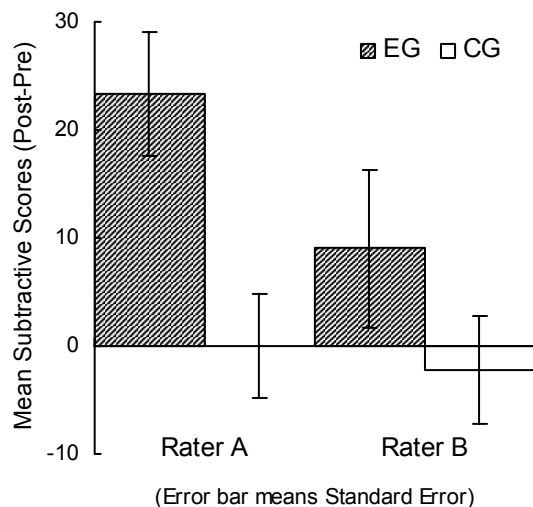


Figure 3: Comparison of creativity rating between subjects in EG and in CG

Drawings by subjects in EG were rated significantly higher than those in CG (Figure 3) [ $F(1,16)=5.54$ ,  $p<.05$ ]. The fact that scores were significantly different between the two raters suggested that norms of artistic creativity would vary among artists [ $F(1,16)=4.65$ ,  $p<.05$ ]. However, it was important to note that the two raters evaluated the posttest drawings by EG subjects in the same way. There was no interaction among the three factors. Findings suggest that copying other's drawings provided the subjects opportunities for creating new styles of drawing.

### Analysis of Process 1: Relaxation of Students' Constraints

Why could subjects who had copied other's works produce more creative drawings? Note that the pictures the subjects had to copy (abstract style) were fairly different from typical pictures that subjects normally encounter (representational style). If subjects were constrained by their beliefs that drawing must follow a representational expression style, copying drawings in an abstract style might relax the constraint by making them aware of other stylistic possibilities.

In order to conduct further analyses of the process of creation, we focused on the following three aspects: (1) number of pictures that included realistic contents; (2) strength of the subjects' realistic intention; (3) number of subjects who reported a failure of creative drawing.

#### Number of Pictures that Included Realistic Contents.

If subjects were constrained by their beliefs that drawing had to be realistic, such beliefs would affect the content of their drawings. In this study, we coded a drawing as constrained by such beliefs if it contained at least one of the following aspects: (1) drawings that designate a specific scene made up of either realistic elements or stylized ones (e.g., one similar to an illustration of a storybook); and (2) drawings in which subjects sketched only the materials presented (example of drawing from CG condition in Figure 2). We took these two types of drawings to indicate that subjects drew without their own figurative interpretations.

The numbers of drawing which contained the contents described above were approximately equal in the pretest phase in both conditions (70% in EG and 80% in CG) [ $p=1.00$  with Fisher's exact test]. The frequency of that in EG, however, significantly decreased compared to that in CG in the posttest phase (20% and 90%, respectively) [ $z=-2.21$ ,  $p<.05$  with test by standardized scores].

**Strength of Subjects' Realistic Intention.** Did subjects actually intend to draw pictures so realistically? In order to capture their intention, we investigated how much they paid attention to technical viewpoints related to realistic sketch-like drawing. We assumed that the more subjects thought they had to draw realistic and photo-like pictures, the more strongly

they would attend to such technical viewpoints. If copying pictures in an abstract style relaxes such a constraint, then the degree of EG subjects' attention to such technical aspects would decrease in the posttest.

After posttest drawing, subjects were asked to answer a questionnaire intended to measure their realistic intention during both the post and pretest drawing. This questionnaire consisted of 11 items on five-point scale (ranged from 1 to 5, including two inverse items) that covered a variety of aspects of realistic intention (e.g., "I paid attention to capturing the materials' form exactly"; "I tried to express the quality of the materials' surface"). For the 11 items, the coefficient alpha was .86.

A two-way ANOVA (three experimental groups X two phases) for the sum of item scores revealed a significant interaction [ $F(2,27)=9.82, p<.001$ ]. Further analysis revealed that, while there was no significant difference on groups in pretest phase [ $F(1,54)=0.01, n.s.$ ], in posttest phase, scores in EG and RG significantly decreased compared to scores in CG (Figure 4) [ $F(1,54)=7.93, p<.001$ ;  $p<.05$  with Steel's multiple comparison for difference scores of post-pre test]. In addition, subjects' scores in the pretest phase were on average about 70 % or more of the maximum score and thus seemed to show their strict intention to use a realistic drawing style. Hence, we can conclude that the subjects did, in fact, have representational constraints in the beginning of the study and that the constraints were then relaxed by means of copying pictures with an abstract style.

**Number of Subjects Who Reported a Failure of Creative Drawing.** We asked subjects to report what they devised in the posttest drawings. Their answers were divided into categories and the contents and the number of responses were analyzed.

Characteristically, half of the subjects in CG reported

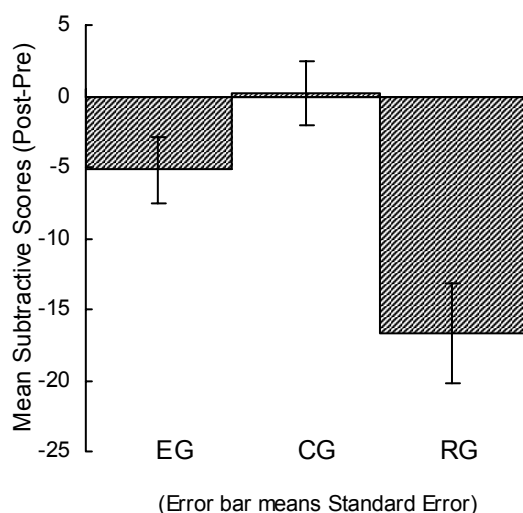


Figure 4: Subjects' intention to draw realistically.

that they could not come up with any new ideas and just sketched what they saw (e.g., "I thought that I could not draw well if I pay too much attention to originality. So, I decided to draw the materials as they are"). In EG, however, no subject reported such a comment [ $p<.05$  with Fisher's exact test]. This result implies that subjects in CG were kept constrained by their beliefs and could not produce new ways of drawing.

## Analysis of Process 2: Generation of New Ideas

The previous section revealed that copying relaxes subjects' constraint. However, even if their constraints are relaxed, it is insufficient for production of a new style of drawing. Because, in order to create a new style of drawing, subjects need to generate concrete ideas for drawing. In order to reveal how subjects in EG came up with new ideas when their constraints were relaxed, we focused on subjects' copying process in the treatment phase.

We presumed that thought processes during copying include two aspects: (1) understanding others (in this case, a creator who produced the artwork) and (2) understanding oneself. The former aspect is an effective one in order to reproduce others' artworks. The knowledge about the pictures would be deepened by means of inferring the creator's art making process. In this point of view, however, copying can be risky since people may lose their own originality. Thus, many people have claimed that copying might be harmful to creation. As we pointed out, this is a well known argument.

In contrast, the second aspect, understanding oneself, is not so well known. In this aspect of thought processes, the copiers' own expression may become clarified by means of comparisons with others' artworks. Thus, people's generation of new ideas might be facilitated through their searching for originality. This aspect may be particularly important for creativity, because it might promote the copier's ability to produce her/his own original artworks.

It is hypothesized that subjects in EG experienced these two aspects of thought processes when copying and were able to generate new ideas to draw. In the rest of this section, we will focus on the protocols by EG and RG subjects during copying an artist's artworks and describe whether or not the protocols include evidence of these two aspects. Of course, these aspects are double-faced, and one cannot work without the other. In this study, however, we will pragmatically separate them into two aspects and examine each.

**Copying to Understand Others.** In this aspect, getting to know the processes by copying could deepen knowledge of the products. For example, F. Natsume (cartoon artist; 1992) copied a famous Japanese cartoonist's work. He found that the lines of this cartoon give a very round and centripetal impression. This characteristic of the lines has an important role in

creating this cartoonist's characters' special features such as bravery and cuteness. The case shows that he deepened his knowledge about the cartoon through copying its lines.

In addition, understanding others' works requires changing one's standpoint. In order to really copy, it is necessary for us to understand the other's underlying intention of the procedure. When copying, we are forced to infer the underlying intention of the other's works. This process makes us switch our standpoint from an observer to a creator.

Thus, copying facilitates understanding a creator. Did actual copying processes include this aspect? We focused on subjects' protocols during the copying phase (treatment phase in EG and RG) and analyzed whether or not their protocols exemplify understanding others.

In copying, subjects noticed concrete features of elements/parts in the artist's drawings.

- *Why did he draw this horizontal line?* (subject =ID3)
- *He doesn't draw outlines, does he?* (ID3)
- *I copy it paying attention to the distance with other parts.* (ID14)
- *I must use stronger lines. My lines were not clear at all.* (ID19)

Subjects also tried to understand the artist's intention.

- *I think, the thick parts of the leaves indicate this plant's vitality.* (ID16)
- *Each element in the picture may not represent each leaf of the real plant.* (ID7)

In this way, copying process did have an aspect of understanding others. Subjects in RG could reproduce the new picture in the artist's style because they would engage such a process and deepen their knowledge about the artist.

**Copying to Understand Oneself.** It seems that understanding others also facilitates understanding oneself. Consider the following case. Even if you had no opinion about an issue at first, you may often form your own opinion while listening to others'. In the domain of art, there would exist such a case that the deeper you understand someone's artworks, the more you become aware of your originality.

There are many such examples in art history. For example, Picasso and van Gogh copied old masters' artworks, exploring their own original style rather than keeping the styles of the artworks exactly (Galassi, 1996; Homburg, 1996). Picasso talked about his copying (Sabartés, 1959):

*Suppose one were to make a copy of The Maids of Honor (Las Meninas); if it were I, the moment would come when I would say to myself: suppose I moved this figure a little to the right or a little to the left? At that point I would try it without giving a thought to Velázquez. Almost certainly, I would be tempted to modify the light or to arrange it differently in view of the changed position of the figure. Gradually I would create a painting of The Maids of Honor sure to horrify the specialist in the copying old masters. It would not be The Maids of Honor he saw when he looked at Velázquez's picture; it would be my Maids of Honor.*

This case shows that Picasso actively explored his own expression through copying Velázquez's work. It is a different aspect from the one that focuses on learning particular techniques or expressions (i.e. understanding other's works).

Why does copying facilitate self understanding? We propose the following two reasons. At first, when copying other's works, you constantly compare other's expression with your own. This "comparison" process forces you to actively interpret the differences between the other's works and your own. This is the first step in searching for your own original expressions. Secondly, particularly in copying artworks, you can externally compare a model with your copy. This encourages you to notice differences between the two.

Our protocol data show subjects' self understanding. First, subjects' own visions emerged. They interpreted the figures in their own way as well as inferred the artist's intention.

- *It looks like fossil fishes are swimming.* (ID7)
- *It looks like insects are flying.* (ID12)
- *They look like ribs or fish bones.* (ID3)

Some subjects felt uncomfortable with the other's works. It seemed that such feelings prompted them to explore their comfortable expressions.

- *Why did he/she draw such cross marks? I cannot find them in this material [= a shell]. I don't understand it.* (ID19)
- *I don't like patterned figures like this. Because it's monotonous.* (ID1)

Some subjects became aware of their own expression by means of the comparisons with other's work.

- *His lines end smoothly, but mine stopped tightly.* (ID1)
- *In the previous copy, I failed to draw pictures well, because I drew the elements too big and lost balance.* (ID14)

- This picture reminds me of previous day's paintings [Subject's own drawings in the last session]. I now understand that mine were not so original. (ID1)

These findings enable subjects to understand what kinds of expressions they usually use and what kinds of expressions they want to create.

## General Discussion

This study revealed that an experience copying others' drawings facilitated subjects' artistic creativity. It was also showed that at least two underlying processes affected this performance. First, constraint relaxation processes enabled subjects in the EG to explore drawing styles beyond the familiar realistic and representative style. Second, generating new ideas through comparison with other's works prompted subjects to notice their own original expression. Based upon these findings, we propose a model about copying to creation (Figure 5). It is suggested that constraint relaxation and generation of new ideas (including two aspects of copying) together can facilitate a new style of drawing.

Some recent studies investigated the effect of experimenter-presented examples on a creative generation task. For instance, Smith, Ward, & Schumacher (1993) found that people unconsciously tend to incorporate features of the examples in their creation (conformity effect). This effect varied with conditions; for example, the effect was enhanced with a delay between exemplar presentation and creation test (Marsh, Landau, & Hicks, 1996). In addition, it was related to inadvertent plagiarism because people fail to monitor their source of novel knowledge appropriately. These studies suggest that examples may negatively affect creation. However, it is well known that no idea is completely original; all forms of creation are strongly affected by already existing things. Thus, the question that we want to answer here is how people create new ideas even if they have a tendency to be heavily influenced by old ideas, as previous studies suggest. Although this research is still in an early stage, we propose that the process of understanding oneself in comparison with others works is a key mechanism of creation.

One reason why previous studies did not focus on this aspect is perhaps that the subjects in these investigations saw exemplars for only a few minutes and thus did not have enough time to involve themselves in the process of understanding. In contrast, in our experiment, the subjects spent about forty minutes copying pictures. This long, active exposure to examples may have forced them to engage in the process of understanding themselves.

Despite this, copying others' works may not be the only means of making people more creative. If they were just told verbally to consider other forms of

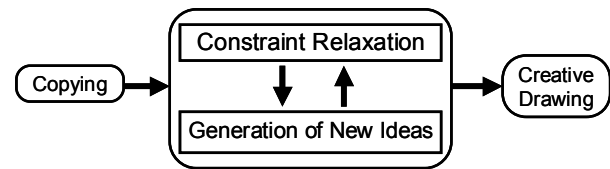


Figure 5: Interactive processes in copying.

drawing or presented others' works as exemplars without copying, then they might also be able to draw more creatively. We are currently conducting another experiment to test these possibilities.

## Acknowledgments

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