Effects of creativity on aesthetic experience

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It is often neglected that the experience of artwork is a creative act, and one which requires the audience to be creative. This exploratory study aimed to examine whether creative activity and measures of person’s creativity are correlated with the aesthetic experience of paintings. Eighty-two participants rated 21 paintings, including 7 figural traditional paintings, 7 semi-abstract works, and 7 abstract works. Participants were randomly assigned to one of two experimental groups. One group first created collages and then rated the paintings on five aesthetic preference scales, while the other group first rated the paintings and then created collages. Multilevel regression analysis with two crossed random effects (participants and paintings) was used. Results showed that performing a creative activity prior to rating artwork positively influenced ratings of artwork creativity. In addition, collage creativity was positively correlated with ratings of (semi)abstract paintings as beautiful. It is hypothesized that people become more open to new, unusual experiences, are more flexible and act more freely in their decisions when performing a creative activity, which reflects positively on stronger preferences of paintings.

Keywords: aesthetic experience; creativity; beauty; preferences; empirical aesthetics

Highlights:

• That the experience of art is a creative act is often neglected
• Doing a creative activity positively influences the experience of art
• Art-domain creativity measures are positively correlated with aesthetic preferences
• Creative people have stronger preferences for (semi)abstract paintings
• Creativity is a domain-specific rather than generic process

In everyday language, only those who actively create or perform art – painters, sculptors, musicians, singers, actors, in a word ‘artists’ – are considered creative people. However, it is often neglected that observing, enjoying and experiencing artwork are creative acts that require the observers, listeners and

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viewers to be both active and creative participants. Collingwood (1938) has previously highlighted the connection between the productive work of an artist and the activities of art consumers. He argues that both the creator and consumer of art participate in the development of the artwork; the role of the public “is not simply receptive, but collaborative” (Collingwood, 1938, p. 324). Every time we observe artwork, we become its creators together with the artists, because our reaction to the artwork leads to its completion (Zausner, 2007). Audience participation in the joint creation of artwork has recently been emphasized in the Mirror Model of Art (Tinio, 2013). Together, these authors’ ideas suggest that creativity is just as important in the perception and enjoyment as it is in the creation of a work of art. However, the importance of creativity on the aesthetic experience of artwork has been neglected (Vartanian, 2014). The connection between creating and observing a work of art has not been sufficiently studied in the psychology of aesthetics, creativity and art (Tinio, 2013).

Creativity

One of the first problems a researcher encounters when studying the phenomenon of creativity is the lack of a unique definition (Plucker & Makel, 2010). Most authors have defined creativity as the act of creating something original (new, innovative, unique) and appropriate (meaningful, useful, applicable) (Beghetto & Kaufman, 2014; Plucker, Beghetto, & Dow, 2004; Simonton, 2012; Sternberg & Lubart, 1999). In the literature on creativity, the 4Ps model (Rhodes, 1961) has gained wide acceptance. This model views creativity as a dynamic phenomenon comprising four components: person, process, product, and press. In this study, effects of creativity are observed in terms of three components: persons’ characteristics (based on divergent thinking (DT) test results and self-assessment using a creativity questionnaire), process (collage creation), and product (collage creativity).

Creative process. Kaufman and Beghetto (2009) argue that we can express creativity in many different ways and suggest the Four C Model of Creativity. In this model, there is a gradation of four dimensions of creativity, from the creativity involved in the learning process (“mini-c”), through everyday creativity (“little-c”) and professional-level expertise in any creative area (“Pro-c”) to eminent creativity (“Big-C”). In this study, the focus is on the everyday creativity (“little-c”), which is associated with concepts such as innovative education, aesthetic assessment, self-actualization (Richards, 2007), practicing hobbies, personal development, productivity and problem solving in everyday life (Ivcevic, 2007), and is represented by activities such as making collages, taking photos or publishing in journals (Kaufman & Paul, 2014).

According to Richards (2007), involvement in a creative activity can make our experience of artwork more vivid, enjoyable, and meaningful. In addition, it can make a person more open, complete, and stable, and can aid our development. This engagement is an opportunity for potentially creative results, because such activity directs the person to abandon the habit of recognizing objects, which
is basic in daily life (Cupchik, 1999). A person engaged in a creative activity pays more attention to the formal characteristics of artwork, such as tonality, form, balance, color, and texture, which leads to a more holistic view of the artwork or the natural environment (Cupchik, 1999). Creative activity can have multiple functions, often interlinked, such as problem solving, self-expression, self-actualization, research, and experimentation (Rogers, 1961; Runco, 2007). It allows spontaneous and uninhibited playing with these representations, values, and objectives, bringing them into question, and caricaturing or exaggerating them. Runco (2007) purports that ego strength is being expressed and, more importantly, strengthened during creative acts. Similarly, Csikszentmihalyi (1996) identifies artistic act with the state of flow, increased concentration, total immersion in an activity, and enjoyment, which provides a certain degree of challenge adjusted to a person’s capabilities. Based on the above findings we proposed our first hypothesis: performing a creative activity (in our study collage creation) will have a significantly greater impact on positive aesthetic preferences of paintings that deviate from a naive understanding of artwork (such as semi-abstract and abstract works). After a creative act a person is more open for challenging tasks, more focused on formal characteristics of paintings and more inclined toward mental experimentation.

**Creative person and product.** Highly creative people are often described as: spontaneous and free (Maslow, 1971), having increased awareness (Richards, 2007), unconventional, independent (Feist, 1998, 2010). Creativity can also represent sensitivity to problems, and an ability to redefine, such as when transforming thoughts or freedoms beyond functional fixation (Guilford, 1962). Creative people have a high tolerance for uncertainty, prefer complex structures and appreciate intellectual challenges (Barron, 1993; Csikszentmihalyi, 1996; Eysenck, 1993), and tend to prefer disturbing, conflicting figural representations (Giannini & Bonaiuto, 1999). Results of most studies show that creativity is positively correlated with Openness to experience (Chamorro-Premuzic & Reichenbacher, 2008; Dollinger, Urban, & James, 2004; Furnham, Crump, Batey, & Chamorro-Premuzic, 2009; McCrae, 1987). Following these findings we defined our second hypothesis: more creative persons will prefer non-traditional, (semi)abstract artworks. More creative persons are unconventional, free, flexible, prefer complex structures and therefore we assumed that they would prefer non-traditional and challenging paintings.

In this paper, three methods were used to assess people’s creativity: (a) DT tests, (b) consensual assessment of collage creativity, and (c) self-assessment of creative achievements. DT tasks are often used to assess creative thinking potential, creative cognitive style, or ability to generate creative ideas (Runco, Dow, & Smith, 2006; Silvia et al., 2008). In DT tasks, participants are asked to generate as many different and original answers to a question as possible. Consensual assessment is used to determine the creativity of products (collages in our study), and relies on independent assessments of individuals (Hennessey & Amabile, 1999). The creativity of a product reflects the creativity of its
author. Therefore, the assessment of a person’s product, as a way of observing his/her creativity, is a good starting point (Besemer & O’Quin, 1986). The third method used was self-assessment of creativity, in which the participants assessed their own creativity, focusing on the personality aspect of creativity. The use of different measures of a person’s creativity increases the predictive validity and allows the inclusion of different forms of creativity. Previous results have shown low predictive and convergent validity between different creativity tests (Silvia, 2011; Simonton, 2003). Therefore, we defined our third hypothesis: the correlation between different measures of creativity used in the study will be low.

Aesthetic experience

The experience of an art object is very idiosyncratic, and many studies have confirmed that it is “in the eye of the observer”. The quality of an aesthetic experience for the same object can vary from interesting to disgusting (Silvia, 2009), and elicit mild pleasantness (Reber, Schwarz, & Winkielman, 2004) ecstasy, self-transcendence, or extraordinary states of consciousness (Funch, 1997; Marković, 2012). However, one of the dominant views in traditional philosophy of art (Carroll, 2002; Scruton, 2009) and psychology of art (Shimamura, 2013), and among the naïve observers (Augustin, Wagemans, & Carbon, 2012; Stojilović, 2014) is the link between the aesthetic experience and the experience of the beauty of an art object. Another quality that is often associated with the appraisal of artwork, especially in contemporary art, is evaluation of its creativity. As this study explored the impact of creativity on the experience of paintings, the second measure of aesthetic experience used (besides beauty) was an evaluation of the creativity of paintings.

Creativity and aesthetic experience

In the psychology of art, a few studies have linked creativity to the experience of artwork. Koestler (1964) was one of the first to explain the aesthetic experience through the mechanism of creative thinking. The essence of creativity lies in perceiving a situation or idea in two self-consistent but habitually incompatible frames of reference. An aesthetic experience has the same mechanism as a creative act, and happens when two incompatible matrices of thought are juxtaposed in a completely new whole. Intellectual illumination and emotional catharsis are, according to Koestler, the essence of aesthetic experiences.

Results from a study by Aks and Sprott (1996) suggest that creativity and aesthetic preferences are related. However, the results are not univocal; findings suggest that people with high scores on DT tests prefer less detailed patterns (low fractal dimension), while self-reported creative individuals have a marginally greater preference for more detailed patterns (high fractal dimension). In research exploring preferences of originals and facsimiles of abstract art (Mondrian and Hirst paintings), it was found that creativity, as measured by the Barron-Welsh scale, is not connected with a stronger preference for original works (Furnham &
A recent study by Myszkowski, Storme, Zenasni, and Lubart (2014) found a connection between visual aesthetic sensitivity (which is the perceptual ability to identify differences in terms of harmony, good design, or symmetry) and creativity. According to the results of that study, visual aesthetic sensitivity is moderately positively correlated with creative potential, as measured by a figural DT task. In music, Rawlings, Hodge, Sherr, and Dempsey (1995) found high Eysenck’ Psychoticism scores (which the authors associated with creativity) among subjects showing a relative preference for “hard” music, “harsh” chords, and discordant musical triads. Creative potential was found to be related to a preference for more complex musical pieces (Ziv & Keydar, 2009).

This article presents an exploratory study on the interrelation between creativity and aesthetic experience. Two qualities of aesthetic experience were observed: ratings of paintings’ beauty and creativity. In addition to using DT test measures of creativity, a collage creativity assessment, and a self-assessment of creativity, we also explored the influence of practicing a creative activity (collage creation) on the experience of artwork. We can sum up the proposed hypotheses:

**Hypothesis 1**: Performing a creative activity (collage creation) will have a significantly greater impact on positive aesthetic preferences of abstract paintings (Cupchik, 1999; Richards, 2007; Runco, 2007)


**Hypothesis 3**: The correlation between different measures of creativity used in the study will be low (Silvia, 2011; Simonton, 2003)

**Method**

**Participants**

The study comprised 82 participants, all of whom were first-year students at the Department of Psychology, Faculty of Philosophy, University of Belgrade. Nine participants (11%) were males and 73 (89%) were females. The participants were aged between 18 and 28 years ($M = 19.56$, $SD = 1.54$).

**Stimuli**

The study utilized 21 paintings: 7 figural traditional paintings from the Renaissance and Baroque periods, 7 semi-abstract works created after 1950, and 7 abstract works created after 1920. The selection of paintings was made in the preliminary study, when the author singled out 50 paintings for each of the 3 styles. Through an online survey, three experts (one art historian and two visual artists) evaluated to what extent each of the paintings belonged to the style “identified” by the research author. The scale of assessments ranged from $1 – Does not belong at all$ (in Serbian $Uopšte ne pripada$) to $5 – Fully belongs$ ($U potpunosti pripada$). From the paintings for which all 3 experts said that they “fully belong” to the identified style, 21 paintings were randomly chosen – 7 figurative, 7 semi-abstract, and 7 abstract. The paintings used are listed in Appendix 1.
Instruments

**Divergent thinking tests.** We used three DT tests: “Unusual use” (creative use of an everyday object – brick), “Associations” (identifying creative common categories for two concepts – meat and milk), and “Consequences” (proposing creative solutions to a hypothetical situation – if people did not need to sleep) (Kaufman, Plucker, & Baer, 2008). Participants were instructed to try and produce “as much as possible unusual, creative, and rare” answers. All DT tests were given as paper and pencil tests, and each task had to be completed within 3 minutes.

Participants’ answers were independently assessed by three trained evaluators on two aspects: fluency (the number of created ideas) and originality (the quality of the ideas). Training of evaluators involved an introduction to the scales, the scoring method, and typical responses made in previous studies. Fluency scores were obtained by counting the responses that were evaluated as adequate for the relevant DT test. Originality scores, the uniqueness of responses to a given stimuli, were obtained by summing the originality marks of participants’ responses for each DT test, where the marks ranged from 0 = Not original (in Serbian Nije originalan) to 3 = Highly original (Visoko originalan).

Two-way mixed average intraclass correlation coefficients showed sufficient consistency among the raters for all three DT tests: “Unusual use” ICC (2, 3) = .960, p < .001; “Associations” ICC (2, 3) = .904, p < .001; and “Consequences” ICC (2, 3) = .877, p < .001. Ratings were averaged, creating the results of the three DT tests (LeBreton & Senter, 2007). As the correlation coefficients between three DT tests were non-significant or low (ranging from -.12 to .42**), the DT tests were considered as three separate measures.

**Collage creativity.** Consensual assessment technique was used to assess the creativity of the participants’ collages (Amabile, 1983; Hennessey & Amabile, 1999; Kaufman & Beghetto, 2009). Five art teachers with more than 10 years of work experience in high schools rated each collage. High school teachers were chosen as raters because they interact with people who are not professional artists, similar to the participants in this study. Each rater assessed the collages independently. The raters listed the collages starting from the least creative (collage creativity = 1) to the most creative (collage creativity = 100), with the possibility to give equal number of points to the collages they assessed as equally creative. One of the raters did not show an adequate level of intersubjective consistency and because of this only the assessments of other four raters were used in further analysis. Their consistency was satisfactory ICC (2, 4) = .750, p < .001, and therefore their rates for collage creativity were averaged, creating the variable Collage creativity (Hennessey & Amabile, 1999).

**Self-assessment of creativity.** The Creativity Scale for Different Domains questionnaire, created by Kaufman and Baer (2004), was used. This questionnaire assesses general creativity and creativity in nine specific areas: science, interpersonal relationships, writing, art, communication, solving own personal problems, mathematics, handicrafts, and physical (body) movements. Each domain was rated on a Likert scale ranging from 1 = Not at all (in Serbian Uopšte nisam) to 5 = Extremely (Izuzetno). Internal consistency of these 10 items measured by Cronbach alpha was .78, and therefore they were averaged into a single measure.

**Interest in art.** The participants’ degree of interest in art was determined using four questions related to the number of visits to museums and galleries in the past year, and the degree of interest in art and paintings (Stojilović, 2012). Questions related to the number of visits museums and galleries in the last year were rated on a Likert scale ranging from 0 = No visit (in Serbian Nijedanput) to 4 = 10 or more times (10 ili više puta). Using a similar Likert scale ranging from 0 = Not at all (in Serbian Uopšte nisam) to 4 = Very much (Veoma mnogo) the degree of interest in art and paintings was rated. These four questions were averaged to obtain an overall value for Interest in art (Cronbach alpha = .82).
Aesthetic experience. The participants rated each of the paintings viewed on the following five (seven-point) Likert-type scales: beauty, creativity, interestingness, pleasantness, and comprehensibility. The beauty and creativity of the paintings were used as the dependent variables. These two variables were selected because the experience of beauty is most often associated with the evaluation of a visual artwork, while creativity is one of the most important qualities of the (contemporary) visual art (Perniola, 2005; Vasiljković, 2005). The other three measures of painting preferences (pleasantness, interestingness, and comprehensibility) were used as predictors of ratings on two scales of aesthetic experience. These three measures were introduced as covariates to statistically control for the effects they have on two dependent variables. These covariates include three distinctive characteristics of aesthetic experience: affective, motivational and cognitive aspect (Marković, 2011, 2012). In addition, these three measures were chosen based on previous research which showed that these underlie the higher level factors of aesthetic experience (Stojilović, 2014).

Procedure

Students were invited in groups of six to eight, and were randomly assigned to one of two experimental groups. The first activity of the “Collage – Evaluation” group was to make a collage, which should be as creative as possible. Participants were informed that they could use all the materials positioned in front of them (newspapers, coloured paper, crayons, glue) and that they had 45 minutes for the activity. Each participant was given a white A3 piece of paper on which he/she created a collage. This group then evaluated the set of 21 paintings on the 5 aesthetic preference scales. The paintings, which were presented randomly, were exhibited using an LCD projector, without time limits. A subsequent painting was presented after all participants had completed their ratings of the previous one. The “Evaluation – Collage” group first rated the paintings and were then given 45 minutes to create a collage. Afterwards, both groups completed the interest in art and self-assessment of creativity questionnaires, and the three DT tests. Finally, the participants received a short debriefing on the purpose of the research.

Design

Eighty-two participants observed 21 different paintings and evaluated in terms of beauty and creativity scales (a total of 3442 ratings, 2 ratings were missing). The independent variables were: time-varying ratings of pleasantness, interestingness, and comprehensibility of paintings; style of the observed painting (three levels: figural, semi-abstract, and abstract); experimental groups (two levels), results on interest in art, three DT tests, self-assessment of creativity, and assessment of collage creativity.

The multilevel modeling of crossed random effects analysis was used (Heck, Thomas, & Tabata, 2013; Hoffman, 2015; Hox, 2010). Multilevel models are statistical models of parameters that vary at more than one level (Hox, 2010). This analysis provides several advantages over the traditional univariate or multivariate analysis on one level (Heck et al., 2013) and allows avoiding the problem of whether to do the analysis on the level of rating done by individuals, individuals themselves or paintings. Although multilevel modeling is usually applied to models with a hierarchical structure, multilevel models are also used for models where random factors are crossed at the same level (Locker, Hoffman, & Bovaird, 2007). Crossed random effects analysis allows different combinations of random intercept effects or random slope effects to be specified directly for participant and painting covariates (Yu, 2015). The crossed random effects model is able to model multiple variations – between participants and paintings and their interaction – at the same time. Individual ratings are nested within participants and within the paintings. It has an advantage over hierarchical multilevel models in that it avoids the problem of whether to analyze data on the level of ratings made by individuals within paintings or on the level of paintings within individuals (Fischer, Carbon, Rutar, Stojilović, & Ortlieb, 2016; Stojilović, 2014).
Results

The results of descriptive statistics are presented in Table 1. For the three DT tests and for collage creativity, column α presents the measures of mutual agreement of raters (ICCs). For all other variables in this column, Cronbach’s alpha values are shown as measures of internal consistency. The scope of reliability is from .75 to .96, and all results can be considered sufficiently consistent (Solomon & Sawilowsky, 2009).

Table 1
Descriptive statistics (left table) and Pearson correlation coefficients between variables (right table) (N = 82)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Average</th>
<th>SD</th>
<th>α</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Gender</td>
<td>F = 73 (89%)</td>
<td>M = 9 (11%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Group</td>
<td>E-C 37 (45.1%)</td>
<td>C-E 45 (54.9%)</td>
<td>.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Collage creativity</td>
<td>6–92</td>
<td>46.06</td>
<td>21.20</td>
<td>.75</td>
<td>-.08</td>
<td>-.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Unusual use test</td>
<td>1.0–16.3</td>
<td>5.97</td>
<td>2.71</td>
<td>.96</td>
<td>-.05</td>
<td>-.05</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Associations test</td>
<td>0.3–12.3</td>
<td>5.65</td>
<td>2.35</td>
<td>.90</td>
<td>-.04</td>
<td>.05</td>
<td>.02</td>
<td>-.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Consequences test</td>
<td>0.3–13.7</td>
<td>4.46</td>
<td>2.41</td>
<td>.88</td>
<td>-.01</td>
<td>.01</td>
<td>.01</td>
<td>.15</td>
<td>.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Self-assessed creativity</td>
<td>1.9–4.8</td>
<td>3.34</td>
<td>0.34</td>
<td>.78</td>
<td>.13</td>
<td>-.08</td>
<td>-.05</td>
<td>.23*</td>
<td>-.07</td>
<td>-.08</td>
<td></td>
</tr>
<tr>
<td>8 Interest in art</td>
<td>0.25–3.75</td>
<td>1.60</td>
<td>0.75</td>
<td>.82</td>
<td>-.18</td>
<td>-.07</td>
<td>.25*</td>
<td>.25*</td>
<td>-.02</td>
<td>.18</td>
<td>.45**</td>
</tr>
</tbody>
</table>

Note. Gender – females were the referent group. E-C = “Evaluation-Collage” group, C-E = “Collage-Evaluation” group; “Evaluation-Collage” group were the referent group. * p <.05, ** p <.01

The same table also presents the Pearson correlation coefficients of these measures. There is a noticeable absence of correlations between most creativity measures (with only two significant results, which both fall into the category of low to moderate correlation), indicating that the applied measures of creativity assess different concepts, result similar to some previous findings (Silvia, 2011; Simonton, 2003; Zeng, Proctor, & Salvendy, 2011). Collage creativity, the “Unusual use” DT test, and self-assessment of creativity were positively correlated with interest in art. Self-assessment of creativity and “Unusual use” showed a small positive correlation, and the “Associations” and “Consequences” DT tests had a moderate correlation.

Effects of creativity on aesthetic experience

A multivariate analysis of crossed random effects modelling was conducted to further analyse the data. The restricted maximum likelihood method was used to evaluate the model. The significance of fixed effects was assessed using p values of the Wald test, and the significance of random effects was estimated using – 2ΔLL likelihood ratio tests and informative criteria (AIC and BIC) between two models that include the same fixed effects (Hoffman, 2015). At both levels (participants and paintings), the diagonal correlation matrix was defined, which allows independent variance for the intercepts of the two aesthetic experience scales. The values for denominator degrees of freedom were obtained by a Satterthwaite correction.
The beauty and creativity ratings of the paintings were the dependent variables, used to represent a “cluster” of aesthetic experience. Simultaneous modelling of creativity and beauty ratings allows adjustment of parameters for the expected correlations between ratings on two scales. Ratings of pleasantness, interestingness, and comprehensibility of the observed paintings were time-varying covariates whose values varied with each new aesthetic evaluation. Measures of participants’ creativity, interest in art, and experimental group assignment were predictors at the level of the participants, and the style of paintings was a predictor at the level of the paintings; all variables had unchanging values during the aesthetic evaluations. All covariates were centered on the grand mean.

The first model included individual ratings of pleasantness, interestingness, and comprehensibility of the paintings. All three covariates had a significant effect on beauty and creativity ratings. In the next model (model I, Table 2), the style of the painting was included as a factor. In the model II, the effects of creativity measures and interest in art on the subjective experience of the paintings were tested. After the fixed effects have been included in the model II, in the final model III it was examined to what extent the effects of the paintings predictors show systematic individual differences by adding subject random slopes for the painting predictors to the model. All statistically insignificant effects and interactions (based on the F test value) were removed.

Table 2
Unstandardized regression coefficients of the predictors in the models (with standard errors in parentheses)

<table>
<thead>
<tr>
<th>Fixed part – Parameter</th>
<th>Model I (variables at the level of paintings added)</th>
<th>Model II (variables at the level of participants added)</th>
<th>Model III (adding subject random slopes for the painting predictors)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Creativity</td>
<td>Beauty</td>
<td>Creativity</td>
</tr>
<tr>
<td>Figural paintings (from model II ref. C-E group)</td>
<td>4.340 (0.124)</td>
<td>4.497 (0.089)</td>
<td>4.431 (0.131)</td>
</tr>
<tr>
<td>Semi-abstract paintings (from model II ref. C-E group)</td>
<td>4.747 (0.109)</td>
<td>4.102 (0.069)</td>
<td>4.801 (0.118)</td>
</tr>
<tr>
<td>Abstract paintings (from model II ref. C-E group)</td>
<td>4.308 (0.113)</td>
<td>4.225 (0.074)</td>
<td>4.489 (0.122)</td>
</tr>
<tr>
<td>Figural painting x pleasantness rating</td>
<td>0.066 (0.037)</td>
<td>0.419 (0.036)</td>
<td>0.067 (0.037)</td>
</tr>
<tr>
<td>Semi-abstract painting x pleasantness rating</td>
<td>0.074 (0.034)</td>
<td>0.530 (0.034)</td>
<td>0.081 (0.035)</td>
</tr>
<tr>
<td>Abstract painting x pleasantness rating</td>
<td>0.082 (0.035)</td>
<td>0.573 (0.034)</td>
<td>0.089 (0.035)</td>
</tr>
<tr>
<td>Figural painting x interestingness rating</td>
<td>0.705 (0.033)</td>
<td>0.382 (0.032)</td>
<td>0.701 (0.033)</td>
</tr>
<tr>
<td>Semi-abstract painting x interestingness rating</td>
<td>0.632 (0.030)</td>
<td>0.312 (0.029)</td>
<td>0.625 (0.030)</td>
</tr>
<tr>
<td>Abstract painting x interestingness rating</td>
<td>0.694 (0.031)</td>
<td>0.347 (0.030)</td>
<td>0.695 (0.031)</td>
</tr>
<tr>
<td>Figural painting x comprehensibility rating</td>
<td>-0.074 (0.041)</td>
<td>0.189 (0.040)</td>
<td>-0.075 (0.041)</td>
</tr>
</tbody>
</table>
### Note

E-C = Evaluation-Collage, C-E = Collage-Evaluation, ref. = referent group, DT = divergent thinking. Bold values are significant at the level p < .05, italic values are significant at the level p < .10.

Evaluations of beauty in all three styles of paintings were most strongly correlated with ratings of pleasantness (b̄ from 0.41 to 0.58, Cohen’s d̄ from 0.43 to 0.72), followed by interestingness (b̄ from 0.30 to 0.35, d̄ from 0.41 to 0.51); ratings of painting comprehensibility had the weakest effect (b̄ from 0.09 to 0.20, all b̄ significant at the level of .05, d̄ from 0.13 to 0.22, Table 2, model III).

Creativity evaluations were most correlated with interestingness ratings (b̄ from 0.63 to 0.70, d̄ from 0.74 to 0.90), and had a much lower correlation with pleasantness ratings (b̄ from 0.08 to 0.09, d̄ from 0.09 to 0.10, all b̄ significant at the level of .05). Painting comprehensibility ratings had no effect on creativity evaluations.
For both experimental groups, figural paintings were rated as significantly more beautiful than semi-abstract and abstract paintings. On the scale of creativity, both groups evaluated semi-abstract paintings as more creative than figural and abstract paintings.

There was a significant effect of participation in creative activities on the aesthetic experience of paintings \((F(6, 185.3) = 3.20, p < .01)\). The group that created a collage before observing the paintings rated the abstract and figural paintings as significantly more creative than the group that observed the paintings before creating a collage \((b = 0.43, t(194.3) = 3.89, p < .01, d = 0.28\) and \(b = 0.25, t(199.6) = 2.19, p < .05, d = 0.16\), respectively for abstract and figural paintings).

Two other measures of creativity had a significant effect on the aesthetic experience of the observed paintings: collage creativity \((F(6, 188.6) = 3.65, p < .01)\) and the “Unusual use” DT test \((F(6, 192.0) = 2.63, p < .05)\). Both of these predictors had a weak effect on aesthetic experience. Participants whose collages were evaluated as more creative perceived the semi-abstract and abstract paintings as more beautiful than those whose collages were considered less creative \((b = 0.007, t(292.2) = 3.25, p < .01, d = 0.19\) and \(b = 0.006, t(285.5) = 2.60, p < .05, d = 0.15\) respectively for semi-abstract and abstract paintings). Perceived beauty for the figural and semi-abstract paintings increased with higher “Unusual use” DT test scores \((b = 0.005, t(286.1) = 2.84, p < .01, d = 0.17\) and \(b = 0.005, t(289.2) = 2.91, p < .01, d = 0.17\) respectively for figural and semi-abstract paintings).

In the final model, the variance was significantly explained at the level of participants \((\text{pseudo } R^2_{\text{Participants}} = .605)\) and at the level of paintings \((\text{pseudo } R^2_{\text{Paintings}} = .998)\). These findings indicate a strong relationship between the predictors entered and the aesthetic experience of paintings in the observed population. The model explained 65.2% of the residual variance.

Discussion

This exploratory study examined the relationship between different measures of creativity and the aesthetic experience of visual art. The visual art domain is considered the prototypical domain of creative activity (Sawyer, 2012). The results show that there is a weak positive correlation between some measures of creativity and aesthetic preferences. Hypotheses 1 and 2 have been partially confirmed, while hypothesis 3 has been fully confirmed. Hypothesis 1 has been confirmed in part, as performing a creative activity (collage making) prior to the evaluation of paintings was shown to have a positive influence on ratings of abstract painting creativity, but the impact on beauty ratings was not confirmed. In addition, there was a significant impact on the evaluation of figural painting creativity, which the original hypothesis did not account for. We hypothesized that people with higher scores on measures of creativity would prefer abstract artwork (hypothesis 2). Two measures of creativity were weakly...
positively correlated with the perceived beauty of paintings, namely collage creativity and the “Unusual use” DT test.

The results revealed a lack of correlation between the measures of creativity employed (hypothesis 3); the low and absence of correlation between the three DT tests was particularly unexpected. Although all three DT tests are of the same type (verbal), and they require rich ideation, fluency and mental attitudes, their results did not converge. These results indicate that the measures of creativity employed actually assess unrelated phenomena. The low correlation among different measures supports a domain-specific understanding of creativity (Baer, 2010, 2011; Ivcevic, 2007; Kaufman & Baer, 2004; Kozbelt, Dexter, Dolese, Meredith, & Ostrofsky, 2014; Rawlings & Locarnini, 2007). Namely, “[d]omain generality would be supported by high intercorrelations among different creative behaviors […], while domain specificity would be supported by relatively low correlations among different behaviors” (Ivcevic, 2007, p. 272). Domain-specific theories of creativity argue “that the skills and other factors leading to creative performance vary across domains” (Baer, 2011, p. 77).

Our study found that two creativity measures positively correlating with aesthetic preferences were directly related to the visual art domain: creating collages acts and collage creativity. Therefore, we may conclude that in choosing the measures of creativity and studying their effects on the aesthetic preferences it is important to use measures of creativity corresponding to the visual art domain as much as possible. Another finding is that these two measures of creativity were both positively correlated with abstract painting style, but on different aspects of the aesthetic experience (beauty and creativity). Below we propose different mechanisms of action for these two measures of creativity. However, it is important to note that we refer to two different aspects of creativity: the process and the product. Also, a creative act is a process presented as a discrete measure, defined based on whether the participant took part in the creative act before evaluating the paintings or not. The collage is a product whose creativity is evaluated by a continuous measure, obtained through consensual interpersonal assessment.

Participation in creative activities prior to aesthetic evaluations resulted in the figural and abstract paintings being perceived as more creative than when ratings were made immediately. The created collages were most often in the domain of semi-abstract works that served as a means of personal expression. Creative activity introduces a participant to a freer and more flexible state of mind, especially for new and unusual works such as abstract paintings. In studies by Nelson and Rawlings (Nelson, 2005; Nelson & Rawlings, 2007, 2009, 2010), several specific characteristics of professional artists’ subjective experience of the creative process were obtained, such as deep absorption into the process itself, the state of the inspiration, the feeling of satisfaction with the process of creation, a sense of excitement and freedom, emotional sensitivity, and the feeling of the flow. Although we cannot assume the existence of all these processes and their full experience within naive creators (especially in
laboratory settings), we can presume they exist in a rudimentary form coinciding with a general feeling of comfort during the creative activity. It is assumed that self-expression, a free mind, and a heightened positive mood lead to a more vivid experience of artwork. Other possible explanation is that the process of creating collages influenced the participants during the assessment of paintings to better understand and appreciate more the efforts of artists to create an original artwork. Because of this, after a creative act, the preference of originality of the observed paintings has been increased.

The measure of collage creativity was positively and weakly correlated with the rating of semi-abstract and abstract paintings as beautiful. It is assumed that the characteristic of Openness to experience underlies the production of creative collages and a greater preference for these artworks. Creative people are often described as spontaneous and free, unconventional, independent, open, striving to expand their own experience, having flexible attitudes, which can be subsumed under the personality dimension of openness to experience (Costa & McCrae, 2008; Ivcevic, 2007). Openness includes many essential processes
that are involved in creativity in the visual art domain, including: active imagination, aesthetic sensitivity, preference of diversity, intellectual curiosity, and independent thinking. Openness is linked to greater preference of: the visual arts in general (Chamorro-Premuzic, Reimers, Hsu, & Ahmetoglu, 2009; Feist & Brady, 2004); pop art paintings (Furnham & Walker, 2001); sophisticated, intense, mellow, and contemporary style (Cleridou & Furnham, 2014); and particularly abstract style (Chamorro-Premuzic et al., 2009; Feist & Brady, 2004; Furnham & Walker, 2001; Rawlings, 2000; Swami & Furnham, 2014). More open, flexible, imaginative people on the one hand produce more creative and original solutions, and on the other hand respond more positively to unclear, unconventional stimuli. To explain this relationship we may apply a concept wider than openness, such as the recently suggested concept of an “Aesthetic Quotient” (AQ). AQ comprises various sources of individual differences — openness, sensitivity to complexity, art knowledge, aesthetic empathy, attention, exploratory perception tendencies — important both for aesthetic evaluation, but also for creative production (Myszkowski & Zenasni, 2016).

Participants with higher scores on the “Unusual use” DT perceived comprehensible (figural and semi-abstract) paintings as more beautiful than those with lower scores, hence this kind of verbal task is somehow related to the figural visual art domain. People with higher “Unusual use” DT test scores have richer ideation and a more vivid imagination, and there is a correlation between this test and fluid intelligence test results (Batey & Furnham, 2006; Furnham, Batey, Booth, Patel, & Lozinskaya, 2011). As the comprehensibility of paintings increases, it is assumed that people with a vivid imagination add their own content and descriptions to the observed paintings, enriching and embellishing them, while those with low ideation linger on what is presented within a painting. We assume that the evaluation of comprehensible paintings as more beautiful is related to the greater flexibility of thinking and ideation, primarily on the specific material as it concerned the “Unusual use” DT test.

The weakly positive or absent correlation between different measures of creativity represents a significant limitation of this study, but it also indicates the nature of creativity. This clearly confirms that “creativity is extremely difficult to define and measure” (Runco, 2004, p. 20). A probable reason for the lack of correlation between the creativity measures employed is their reference to different domains of creativity (Furnham et al., 2011). While the DT tests are primarily based on verbal skills and ideation fluency, the creation of collages is related to the openness and perception, and the self-assessment of creativity is associated with openness. Creativity may also involve problem solving, detecting problems, or self-expression, which may have completely different, and potentially contrasting, measures. Therefore, although the weak correlation between the creativity measures points to a potential deficiency of this research, it also highlights the complexity of studying creativity and suggests that the term
should be defined more clearly so that it can undergo rigorous scientific analysis (Baer, 1994; Clapham, 2004; Kaufman, Baer, Cole, & Sexton, 2008).

Another potential shortcoming of this study is the problematic generalization of the findings outside the group who participated in the study. Psychology students are distinguished by particular characteristics that may restrict more general application of the results. Perhaps the biggest issue with the study is its ecological validity. It is hard to conduct a laboratory-based study with rigorous control that is compatible with originality and creativity. Strict control of the research conditions in such studies must always be balanced against constructing a context that does not limit creative production. In our study, attention was paid to creating conditions that would enhance creativity (an encouraging experimenter, an emphasis on originality, reassurance that there were no unusual or wrong solutions, working in small groups, dim light), but the context itself significantly limited creative capacities, particularly those of introverted and socially inhibited persons. It is recommended that similar research is replicated in a more natural, non-laboratory environment and that the potentially negative effects of a social environment are better controlled.

**Conclusion**

In sum, despite the abovementioned limitations, this study is one of the first to examine the relationship between creativity and aesthetic experience. The paper used several indicators of creativity, among which the creative act (making of the collage), collage creativity and the “Unusual use” DT test proved to be significant predictors of aesthetic preference. Those with higher scores on these measures enjoyed the observed paintings more. The weak correlation between the creativity measures used makes it more difficult to identify a unique effect of creativity on aesthetic experience. We suggest that the common feature of these creativity measures is their relation to the visual arts domain. Creativity generates greater openness to new and unusual experiences, it enhances positive mood, and leads to greater flexibility and freedom of ideation, which positively reflects on a stronger preference for the paintings. Few studies in the field of psychology of art and creativity have investigated the relationship between creativity and aesthetic preferences; however, our research shows important links between the two phenomena and provides new clues for future studies.

The results obtained indicate that the experience of artwork is a creative act. A stronger preference for certain visual artworks is influenced by participation in a creative process and by a person’s creativity in the visual arts domain. An artwork does not attain its finished form when an artist finishes his/her work, but is continuously being recreated by the audience. Creativity is important throughout the “life” of an art object, from the moment the artist first sets their eyes on it until the last beholder experiences it.
References


EFFECTS OF CREATIVITY ON AESTHETIC EXPERIENCE


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### Appendix A

**List of paintings used in the study**

<table>
<thead>
<tr>
<th>Figural</th>
<th>Semi-abstract</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pieter Bruegel, Landscape with the Fall of Icarus (1558)</td>
<td>Jean-Michel Basquiat, Untitled (Fallen Angel), 1981</td>
<td>Josef Albers, Homage to the Square (1956)</td>
</tr>
<tr>
<td>Claude Lorrain, Landscape With The Marriage Of Isaac And Rebekah (1648)</td>
<td>Francis Bacon, Figure Writing Reflected In a Mirror (1976)</td>
<td>Wassily Kandinsky, On White II (1923)</td>
</tr>
</tbody>
</table>