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LINGUISTIC ANALYSIS OF STATEMENTS CONCERNING PAINTINGS VIEWED UNDER DIFFERENT INSTRUCTIONS BY EXPERTS AND NOVICES IN THE VISUAL ARTS

This research aimed to perform linguistic analysis of the statements of experts and novices in the arts concerning figurative paintings from the 16th to 19th century of different aesthetic value under different instructions. The experts were selected based on a formal criterion of education in visual arts. Based on previous research, the paintings were divided into three groups: beautiful, not beautiful and controversial. The participants viewed them from different points of view defined by seven instructions. The Linguistic Inquiry Word Count (LIWC) was used to measure the connotation of statements in emotional and cognitive terms. Hypotheses, according to which the statements of novices are marked more with emotional, and those of experts more with cognitive processes, were only partially confirmed. It turned out that the emotional or cognitive connotation of statements concerning paintings is mostly modified by the point from which they are viewed and their aesthetic value.

Keywords: Linguistic Inquiry Word Count (LIWC), experts and novices in the arts, affective and cognitive processes, painting evaluation

Introduction

Viewing paintings activates emotional and cognitive processes that establish a specific aesthetic experience for the observer (Leder, Belke, Oeberst, & Augustin, 2004; Pelowski, Markey, Lauring, Leder, & Locher, 2016). The most common reaction to painting is its evaluation expressed on a subjective scale "I like it - I do not like it," but the reasons for this assessment are not obvious. There are several factors that influence this assessment. Besides the

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aesthetic value of the painting and the observer's expertise in visual arts, the final evaluation of the painting can be affected by factors such as the level and nature of the observer's emotional involvement, and/or the need to search for important elements, mystery or narration in the painting. The purpose of the present study is to investigate to what extent each of these factors influences painting assessment.

On the one hand, a painting may seem attractive because of the positive or negative emotions and feelings it evokes by (1) the sensitivity and experience of the viewer, (2) personal memories and empathic responses, or (3) presenting the most exciting moment of a story contained in an image, its climax. First, the results of past research show that the emotions and feelings experienced while viewing a painting change its aesthetic evaluation (Cupchik, 2016; Pelowski et al., 2016; Silvia, 2009). Cupchik (2011) states that "feelings accompany aesthetic experiences from the first moment of perception" (p. 321). Second, the aesthetic evaluation of a work of art is modified by the empathic response (Di Dio & Gallese, 2009; Pelowski, Markey, Forster, Gerger, & Leder, 2017; Stamatopoulou, 2017), understood as "the projection of the self into the object of beauty" (Jahoda, 2005, p. 154). Freedberg and Gallese (2007) argue that "automatic empathetic responses constitute a basic level of response to images and works of art" (p. 202). Third, from cave art to contemporary art, the artists strived to tell the story in one glance (Gombrich, 1995). They try to freeze the most critical moments of the story in the paintings. Excellent examples of such masterpieces are "The Creation of Adam" by Michelangelo, "Liberty Leading the People" by Eugène Delacroix or "Girl with a Pearl Earring" by Johannes Vermeer (de Paiva Vieira, 2011). However, there is relatively little research on the impact of the way of presenting the climax of a story in the painting and the aesthetic experience of a viewer (Pelowski et al., 2017; Roald, 2007; Waligórska, 2006).

On the other hand, examples of cognitive processes accompanying painting viewing that have a significant impact on the specificity of aesthetic experience include (1) searching for important elements in a painting, (2) discovering its secrets, or (3) capturing its essence in the form of a title. First, Barthes (1981) highlights the role of important elements in the picture in his concept of "punctum." According to this theory, images may contain elements that can cause "shock" or "sting," although some of them could be so subtle that another viewer may not see them. Viewers mostly focus their gaze on faces (Massaro Savazzi, Di Dio, Freedberg, Gallese, Gilli, & Marchetti, 2012), recognizable objects or essential elements of the painting composition (Vogt & Magnussen, 2007). Kuchinke, Trapp and Jacobs (2009) claim that recognizing depicted objects in the cubistic paintings affects its aesthetic evaluation. The way viewers select and process visual data while viewing paintings influences their aesthetic experience (Locher, Krupinski, Mello-Thoms, & Nodine, 2007).

Second, the mystery and ambiguity of a work of art seem to be crucial for aesthetic experience (Leder et al., 2004; Pelowski et al., 2017). They evoke the need for understanding (Jakesch & Leder, 2009), interest (Silvia, 2006), surprise and uncertainty (Berlyne, 1960; Scherer, 2001) and excitement (Cupchik, 2016). The high level of uncertainty and curiosity increases the pleasure of searching and discovering the mystery hidden in an artwork (Knobloch-Westerwick & Keplinger, 2006). The mystery is an important factor explaining the aesthetic preference of images (Kaplan & Kaplan, 1989; Stamps, 2004; Cupchik, & Gignac, 2007).

Third, the aesthetic evaluation of a work of art changes under the influence of additional information (Swami, 2013) and one of them is its title (Gerger & Leder, 2015). Levinson (1985) defines the title of a work of art as an integral part, an essential property of them, which plays a crucial role in understanding and interpreting objects that it denotes (p. 29). It is therefore not an accidental, meaningless expression. Its formulation needs to be abstracted from the image of what is most crucial to it. However, it is not the very presence or absence of a title of an artwork that influences its greater or lesser appreciation. This depends on how it is formulated (Bubić, Sušac, & Palmović, 2017; Gerger & Leder, 2015; Leder, Carbon, & Ripsas, 2006; Millis, 2001; Thömmes & Hübner, 2014), to what extent it expresses the author's intentions (Jucker, Barrett, & Wlodarski, 2014), the level of participants' expertise (Mullennix & Robinet, 2018), whether it refers to a work of figurative or abstract art (Belke, Leder, Strobach, & Carbon, 2010; Leder et al., 2006), and even on the experimental design used (within- vs. between-participants) (Russell, 2003).

Therefore, the aesthetic evaluation of the works of art is a resultant of many emotional and cognitive processes evoked by the contexts of viewing. In our research, the participants were asked questions referring to all the above contexts while viewing the same paintings. We were interested in whether the attitude towards viewing paintings from specific points of view under different instructions influences the emotional and cognitive connotation of words in the statements concerning these paintings.

The quality of aesthetic experience and aesthetic evaluation of artworks depend on the observer's expertise in visual arts (Leder, Gerger, Brieber, & Schwarz, 2014). Expertise causes the way of visual exploration of artwork (Nodine, Locher, & Krupinski, 1993). While novices focus on the elements of a painting, experts draw attention to the relationship between them. Experts also differ from novices because of the degree to which emotions and affect influence their cognitive processes (Leder et al., 2014; Reber, Schwarz, & Winkielman, 2004; Schwarz, 2012). In the novices, these processes are more closely related to each other than in the group of experts (Cupchik & László, 1992; Leder et al., 2004; Leder et al., 2014). It means that

emotional processes have a stronger influence on the cognitive aspects of communion with art in the novices than in the experts.

In this study, the statements of experts and novices in visual arts concerning the viewed paintings were analyzed by the Linguistic Inquiry Word Count (LIWC) (Pennebaker, Francis, & Booth, 2007), in the version adapted to Polish by Szymczyk, Żakowicz, and Stemplewska-Żakowicz (2012). In the Polish language version, the LIWC dictionary contains 5170 words or word stems, assigned to 68 subcategories within four groups: linguistic processes, psychological processes, personal concerns, and spoken categories. The words of the LIWC dictionary were taken from various sources (e.g., questionnaires, tests, dictionaries), categorized by independent judges, and then subjected to psychometric analysis. The decisive factor in the selection and classification of words in the dictionary is their use in speech and/or writing as members of specific linguistic categories. The LIWC2007 word categorization procedure has good external validity and considerable within-person stability (see Hirsh & Peterson, 2009; Mehl & Pennebaker, 2003; Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007; Pennebaker & King, 1999; Weston, Cox, Condon, & Jackson, 2016).

This study focuses only on the linguistic analysis of affective and cognitive processes. In the category of affective processes, two subcategories have been distinguished within the LIWC: positive emotions and negative emotions (anxiety, anger, sadness). The cognitive processes category includes subcategories: causation, insight, discrepancy, inhibition, tentative, certainty, inclusive, and exclusive. Because of the method of data collection used, linguistic analysis of statements cannot be carried out within one theoretical framework, and to some extent, is exploratory.

The main research questions were: (1) Are there any differences between the statements concerning the paintings under different instructions by experts and novices in the visual arts? (2) Do the statements of experts and novices in visual arts differ according to the painting viewed (beautiful, non-beautiful, and controversial)? To date, no studies have been carried out that would conduct a linguistic analysis of the statements concerning the different paintings under different instructions using the LIWC; therefore, this research is partially exploratory.

Nevertheless, based on the results of the research concerning the differences between experts and novices in visual arts, we formulate the following hypotheses: (1) The novices' statements will contain more words belonging to the affective processes category than the experts' statements. (2) The experts' statements will contain more words belonging to the cognitive processes category than the novices' statements. (3) The statements of novices concerning beautiful paintings will contain more words marked with positive emotions than those concerning not beautiful and controversial ones. (4) The statements of experts concerning not beautiful and controversial paintings will contain

more words marked with positive emotions than those concerning the beautiful ones. (5) Instructions relating to the emotional aspect of the aesthetic experience (emotions and feelings, a captured moment and empathy) will cause the statements of novices in the visual arts to be more often marked with the affective than cognitive processes and to a greater extent than the statements of experts. (6) Instructions relating to the cognitive aspect of the aesthetic experience (important elements, title, and mystery) will cause the statements of experts in the visual arts to be more often marked with the cognitive than affective processes and to a greater extent than the statements of novices.

Method

Participants

Forty-eight participants took part in the experiment. Because of incorrect or incomplete recordings, the data of 4 of them were deleted. Data of 44 participants were analyzed: 22 women and 22 men, aged 20–27 (M = 23 years, SD = 1.67). The group of experts consisted of 23 students or graduates in the field of art history, painting or graphics (11 women). The group of novices included 23 students of cognitive science, physiotherapy, administration, Mediterranean studies, biology, psychology, law, and horticulture (11 women). Apart from the lack of formal education in art, the novices also declared a lack of knowledge and interest in visual arts. All participants were healthy and had correct visual acuity with an acceptable defect up to +/-1.5D corrected by glasses. They received an equivalent of $10 for participation in the experiment. This study was carried out under the recommendations of the Ethics Committee of the Institute of Psychology with written consent from all participants.

Stimuli

Reproductions of 9 figurative paintings from the 16th to 9th century (eight-test, and one- instructional) were used in the study. Paintings were selected from 422 reproductions taken from the Internet. After removing 113 of them because of their low quality, being too complex or ambiguous, 38 students assessed the remaining 309 in terms of aesthetics on the scale: “I like it - I do not like it.” Based on the collected data, six independent judges selected nine reproductions in four categories: beautiful (2 paintings), not beautiful (2 paintings), controversial (4 paintings), and instructional (1 painting) (see Appendix).

Procedure

The study was conducted individually at KUL Perception & Cognition Lab. The instructions and reproductions of the paintings were displayed on the

NEC SV246 color monitor with a resolution of 1920×1200. The subjects sat about 65 cm from the monitor.

The experiment started with a training, during which the same instructions were performed as in the test phase, but the participants viewed only one, instructional painting (eight others in the test phase). They could ask questions and their verbal statements were not recorded. The test phase consisted of the following parts: (1) reading instructions for viewing the painting from the aesthetic point of view (one painting randomly selected out of 8), (2) viewing the selected painting for 15 seconds, (3) aesthetic evaluation of this painting on a 5-point scale (1: "I dislike it very much", and 5: "I like it very much"); no oral statements were recorded after the aesthetic evaluation, (4) reading instructions for viewing the same painting from a specific point of view (one instruction randomly selected out of 6; see below), (5) 15 seconds of viewing the same painting, (6) reading the same instruction again for answering a question or problem suggested in it prior to viewing (to remind the participants which angle the painting was being looked at), (7) oral statements (audio recording), and then return to point (1) and repeating the procedure for each painting. The paintings were exhibited at random. The aesthetic evaluation instruction was always carried out first, and the others were carried out afterward in random order. The participant decided on the length of their statement.

Instructions. The following instructions were used (a) before viewing the painting and (b) after viewing it:

Aesthetic evaluation. (a) "Consider to what extent you like the painting you will see in a moment," and (b) "Rate on a scale to what extent you liked the painting you have seen. [1] means that you do not like it very much and [5] means that you like it very much."

Emotions and feelings. (a) "Think about what emotions and feelings are evoked in you by the painting you will see in a moment," and (b) "What emotions and feelings have been evoked in you by the painting that you have seen? Describe them, please, as accurately as possible."

Important elements. (a) "Think which elements you consider the most important in the painting you will see in a moment. How would you justify your answer?" and (b) "Which elements of the painting you have seen are the most important? Give reasons for your answer."

Mystery. (a) "Some works of art conceal a mystery. Think about the mystery of the painting you will see in a moment (if it contains one)," and (b) "What, in your opinion, is the mystery of the painting you have seen (if it contains one)? Give reasons for your answer."

Title. (a) "Think about what title you would give to the painting you will see in a moment in order to express its meaning as accurately as possible," and

(b) "What title would you give to the painting you have seen? Why do you consider this title to be the most accurate one? Justify."

Captured moment. (a) "The painting you will see in a moment presents a scene captured by the painter. Think about why the painter chose this moment," and (b) "Why, in your opinion, did the painter of the painting you have seen choose just this moment. Justify your answer."

Empathy. (a) "Think about whether the scene shown in the painting you will see in a moment seems close to your personal experience. Think about how you would justify your answer," and (b) "Do you think the scene in the painting you have seen is close to your personal experience? Why do you think so?"

Dependent Variable and Statistical Analysis

The audio statements of experts and novices recorded after viewing each painting under instruction (except for the instructions on aesthetic evaluation) were rewritten and developed using the LIWC program. The results of the LIWC indicate the percentage of words in the statement that belong to a particular category in relation to all the words in this statement. To analyze the collected data, the General Linear Model (GLM) for between-subjects (categorial factor) was used for Expertise (Experts and Novices) and within-subjects (repeated measures) was used for Instruction (Emotions and Feelings; Important Elements; Mystery; Title; Captured Moment; and Empathy) and Type of Painting (Controversial; Not Beautiful; and Beautiful). Bonferroni correction was applied to multiple comparisons. The data concerning the aesthetic assessments (on a scale of 1-5) were not taken into account in this analysis because they were gathered to verify the accuracy of the division of paintings into beautiful, not beautiful, and controversial ones based on data collected in another study (see Stimuli section). The data collected in this experiment confirmed the division of the paintings into the three categories mentioned above.

Results

Affective Processes

The linguistic category of affective processes comprises two subcategories: positive and negative emotions. Within the category of negative emotions, three types of emotions are analyzed: anxiety, anger, and sadness.

Positive emotions. The main effect of the Expertise variable, $F(1,33) = .03$, $p = .854$, was not found, but the interaction of the variables Type of Painting and Expertise, $F(2,66) = 9.76$, $p < .001$, $\eta^2 = .23$, on the percentage of words marked with positive emotions in the statements regarding the viewed paintings was found (see Figure 1). Bonferroni-corrected post hoc comparisons showed that in the statements of novices, the percentage of words marked

with the positive emotions in relation to beautiful paintings was significantly higher than in relation to not beautiful (p = .043) and the controversial ones (p < .001). In the statements of experts, it was slightly higher (non-significant trend) in relation to paintings that are not beautiful than to the beautiful ones (p = .095). Noteworthy is the reverse pattern of using the words marked with positive emotions by novices and experts to beautiful and not beautiful paintings.

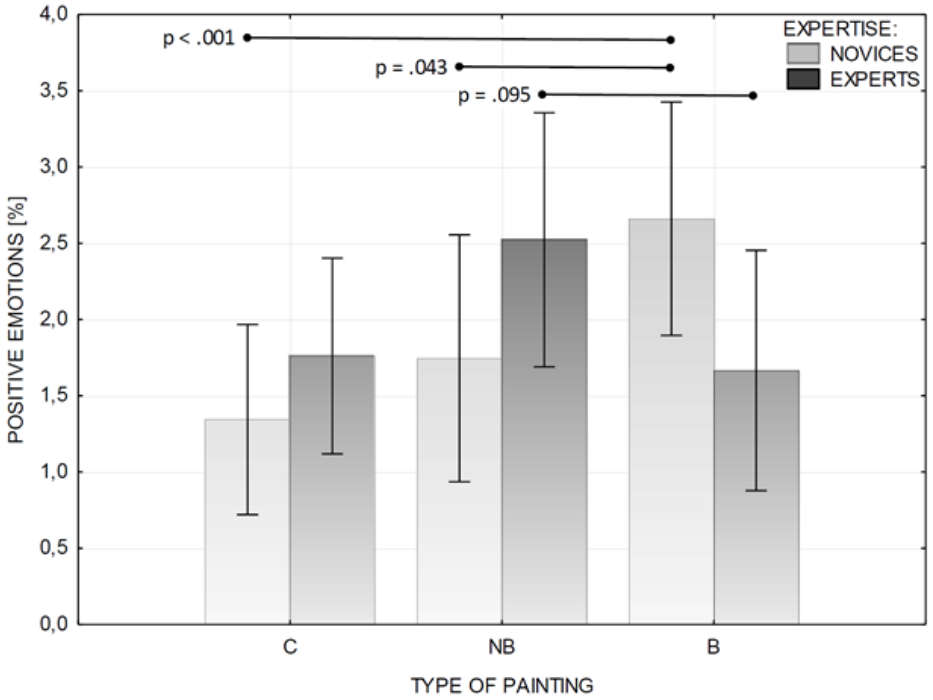

Figure 1. Interaction effect of the variables Type of Painting and Expertise on the percentage of words marked with positive emotions in the statements regarding the viewed paintings. Type of Painting: C – Controversial, NB – Not Beautiful, B – Beautiful. Vertical bars denote +/- standard errors.

Also, the main effect of the Instruction variable was found, $F(5,165) = 12.62$, $p < .001$, $\eta^2 = .28$. Regardless of the expertise, the statements under the Emotions and Feelings instruction were significantly more often marked with positive emotions than statements under the other instructions. Bonferroni-corrected post hoc comparisons for all pairs of instructions with Emotions and Feelings instruction were significant, $p < .001$. The other effects concerning the frequency of using words marked with positive emotions were statistically non-significant.

Negative emotions. Novices more often (non-significant trend) used words marked with negative emotions than Experts, $F(1,33) = 3.49$, $p = .071$, $\eta^2 = .09$. Significant main effects of the variables Type of Painting, $F(2,66) = 4.59$, $p = .014$, $\eta^2 = .12$, and Instruction, $F(5,165) = 12.25$, $p < .001$, $\eta^2 = .27$, were also found. Bonferroni-corrected post hoc comparisons showed that the participants used more words marked with negative emotions concerning controversial paintings than the beautiful ($p = .013$) and not beautiful ones ($p = .095$). Also, words marked with negative emotions were much more frequently used in the statements under the Emotions and Feelings instruction than under other instructions ($p < .001$ for all pairs). Other effects concerning the percentage of words marked with negative emotions were not statistically significant.

No statistically significant effects were found regarding two subcategories of the Negative Emotions category, i.e., Anxiety and Sadness. However, a significant main effect of the Type of Painting variable was found for the dependent variable Anger, $F(2,66) = 4.41$, $p = .016$, $\eta^2 = .12$. Bonferroni-corrected post hoc comparisons also showed that the participants used more words marked with anger regarding controversial paintings than the beautiful ($p = .024$) and not beautiful ones ($p = .047$).

Cognitive Processes

The general category of cognitive processes comprises seven subcategories (Causation, Insight, Discrepancy, Inhibition, Tentative, Certainty, Inclusive, and Exclusive) that are analyzed separately. The main effect of the Expertise variable was not found in any of these cognitive processes.

Causation. The main effect of the Instruction variable was found, $F(5,165) = 5.32$, $p < .001$, $\eta^2 = .14$. Bonferroni-corrected post hoc comparisons showed that the participants used many more words referring to causation under the Title instruction than in the instructions: Emotions and Feelings ($p < .001$), Important Elements ($p < .001$) and Mystery ($p = .037$). The other effects were non-significant.

Insight. Similar to the Causation subcategory, the main effect of the Instruction variable was found, $F(5,165) = 32.77$, $p < .001$, $\eta^2 = .50$. Bonferroni-corrected post hoc comparisons showed that the words referring to insight were used more often in the statements under the Mystery instruction than under all other instructions (all p-values < 0.001). The other effects were non-significant.

Discrepancy. For the Discrepancy subcategory, the main effect of the Instruction variable has been identified, $F(5,165) = 5.21$, $p < .001$, $\eta^2 = .14$. As in the case of the Insight subcategory, the words referring to discrepancy were used more often in the statements under the Mystery instruction than under all the other instructions. However, Bonferroni-corrected post hoc comparisons showed significant differences between the percentage of

words referring to discrepancy under the Mystery instruction and instructions: Important Elements (p = .005), Captured Moment (p < .001) and Empathy (p = .016).

A significant interaction effect of the variables Type of Painting and Expertise, $F(2,66) = 3.61$, $p < .033$, $\eta^2 = .10$ (see Figure 2) was also found for his dependent variable. Bonferroni-corrected post hoc comparisons showed only one significant difference in the Novices group. Participants referred significantly more often to the words belonging to the Discrepancy subcategory concerning beautiful rather than not beautiful paintings (p = .006).

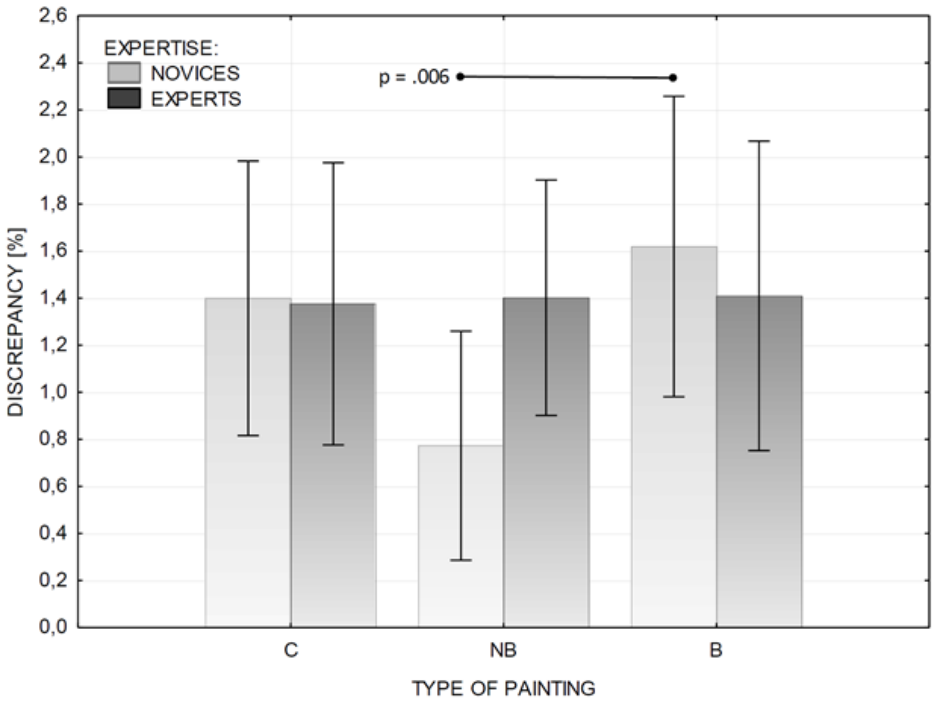

Figure 2. Interaction effect of the variables Type of Painting and Expertise on the percentage of words marked by Discrepancy in the statements regarding the viewed paintings. Type of Painting: C – Controversial, NB – Not Beautiful, B – Beautiful. Vertical bars denote +/- standard errors.

Inhibition. No statistically significant effects were found for the dependent variable Inhibition.

Tentative. The main effect of the Instruction variable was found to be due to the percentage of words marked by uncertainty, $F(5,165) = 5.63$, $p < .001$, $\eta^2 = .15$. The uncertainty was highest in the statements under Empathy instruction compared to all the other instructions. Bonferroni-corrected post hoc comparisons revealed significant differences between the percentage of words marked with the Tentative subcategory in the Empathy instruction and four other instructions (all p-values < .001), except Title instruction. The main

effect (non-significant trend) of the Type of Painting variable was also found, $F(2,66) = 2.94$, $p = .060$, $\eta^2 = .08$. The participants revealed a little less certainty in their statements concerning the not beautiful paintings than the controversial and beautiful ones on the level of the non-significant trend ($p = .10$, and $p = .13$, respectively).

Certainty. The main effect of the Instruction variable was found for the percentage of words marked with certainty, $F(5,165) = 5.11$, $p < .001$, $\eta^2 = .14$. Most words marked with certainty were found under the Emotions and Feelings and Empathy instructions, and least in the Mystery instruction. Both differences between them in pairs were significant (p-values < .001).

Inclusive. The following main effects of variables Instruction, $F(5,165) = 9.86$, $p < .001$, $\eta^2 = .23$, and Type of Painting, $F(2,66) = 7.76$, $p < .001$, $\eta^2 = .19$, were found regarding the occurrence of the words appealing to the inclusion. The highest percentage of words marked with inclusion was found when performing the instructions Mystery and Important Elements compared to other instructions. Bonferroni-corrected post hoc comparisons showed significant differences between the Mystery instruction and Emotions and Feelings ($p = .024$), Title ($p < .001$), Captured Moment ($p = .024$) and Empathy ($p = .002$) instructions. Also, there were significant differences between the Important Elements instruction and the instructions: Title ($p < .001$) and Empathy ($p = .002$). Bonferroni-corrected post hoc comparisons showed there were significantly higher percentage of words marked with inclusion in statements referring to the beautiful paintings than the not beautiful ($p < .001$) and controversial ones ($p = .016$). The other effects were non-significant.

Exclusive. Concerning the Exclusive subcategory, two significant interactions of Instruction and Expertise variables, $F(5,165) = 2.43$, $p < .038$, $\eta^2 = .07$ (see Figure 3) and Instruction and Type of Painting variables, $F(10,330) = 2.23$, $p < .016$, $\eta^2 = .06$ (see Figure 4) were found regarding the occurrence of the words appealing to the exclusion.

In order to see whether lay and expert families differed in the kinds of information they produced during conversations, I separately compared parents and children from the two groups on the proportions of utterances falling into each coding category (see Table 2 for descriptive statistics).

Based on the results of the post hoc test, no statistically significant differences were found between experts and novices regarding any instructions. However, Bonferroni-corrected post hoc comparisons showed significant differences between Emotions and Feelings instruction and Mystery ($p = .002$), Title ($p = .046$) and Captured Moment ($p < .001$) instructions in the group of novices, and between Title and Captured Moment instructions ($p = .029$) in the group of experts. The frequency of using words marked with exclusion under the Emotion and Feeling instruction (in novices) and the Title instruction (in experts) was much higher compared to the frequency of words referring to exclusion under the other instructions.

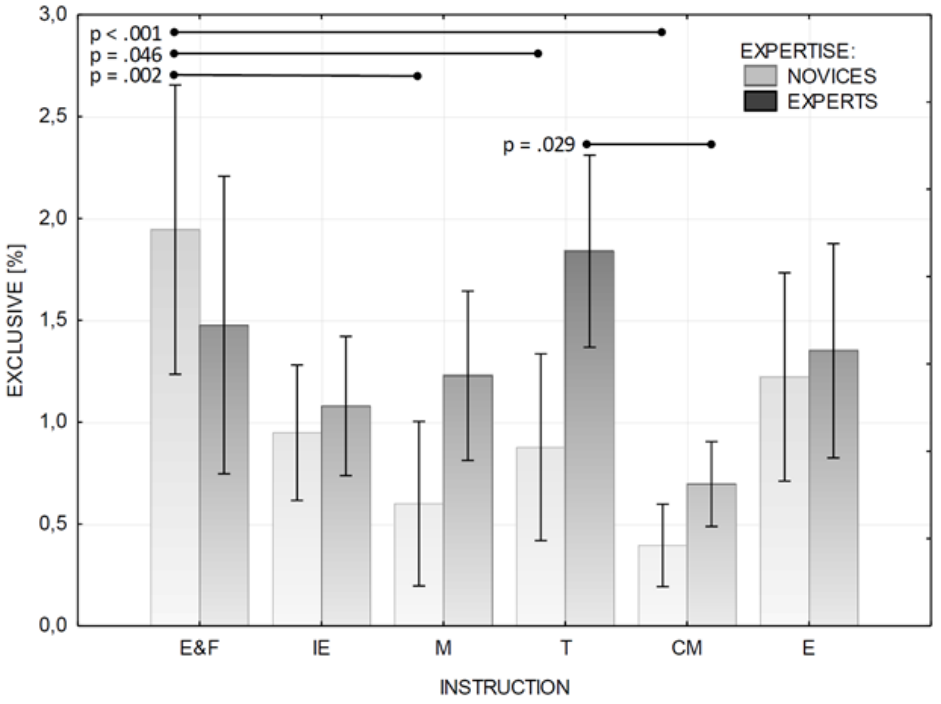

Figure 3. Interaction effect of the variables Instruction and Expertise on the percentage of words marked with exclusion in the statements regarding the viewed paintings. Instruction: E&F - Emotions and Feelings, IE - Important Elements, M - Mystery, T - Title, CM - Captured Moment, and E - Empathy. Vertical bars denote +/- standard errors.

The data presented in Figure 4 and the results of the post hoc test show that the use of words marked with exclusion was significantly more common under the Emotions and Feelings instruction for beautiful images compared to most other instructions and types of images (*p*-values between .48 and less than .001).

Discussion

This study aimed to verify the hypotheses concerning the differences between experts and novices in visual arts in terms of affective and cognitive processing of visual data collected during paintings viewing and expressed in their statements. Besides the Expertise variable, we took two additional independent variables into account: Instruction and Type of Painting. We measured the dependent variable using the LIWC method (Pennebaker et al., 2007; Szymczyk et al., 2012), which allows detecting the differences in the connotation of verbal statements of the participants about the paintings they viewed. The results of the experiment revealed that the relationship between expertise and communication of one's own affective or cognitive experiences, related to the paintings viewed, is neither simple nor obvious. The claim that

novices experience a work of art more emotionally and experts more cognitively seems too general. It considers neither the specific task (instruction) when viewing a painting nor the aesthetic value of this painting.

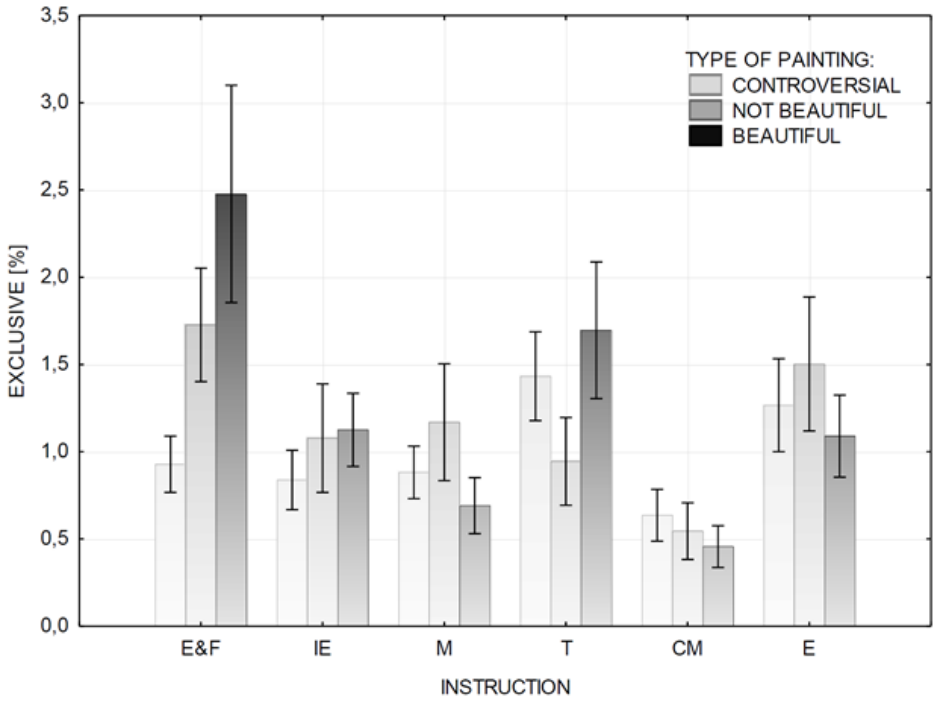

Figure 4. Interaction effect of the variables Instruction and Type of Painting on the percentage of words marked with exclusion in the statements regarding the viewed paintings. Instruction: E&F - Emotions and Feelings, IE - Important Elements, M - Mystery, T - Title, CM - Captured Moment, and E - Empathy. Vertical bars denote +/- standard errors.

We did not find that novices systematically use words belonging to the affective processes category more often than to the cognitive one. Also, the percentage of words belonging to the linguistic categories of cognitive processes was not higher in the group of experts than in novices. Therefore, the first and second hypotheses were not confirmed. Although we found many significant main effects of the Instruction variable, we also did not notice the tendencies expressed in the fifth and sixth hypotheses. Experts' and novices' statements proved to be very similar under different instructions.

Regarding affective processes, we found that novices used words marked with positive emotions more often to beautiful paintings than not beautiful or controversial ones, and experts used them more often to paintings that were not beautiful than to the beautiful ones. We accurately expected this effect in the third and fourth hypotheses. The results of many studies show that there is a correlation between the high aesthetic value of a work of art and the positive emotions accompanying its viewing (see Cupchik, 2016). Silvia (2005) notes

that there is a correlation between the interest in and understanding of an artwork and the positive emotions it evokes. Often, images that are ugly or controversial for a person not interested in visual art gain in the eyes of an expert who sees their value and experiences the pleasure of viewing them. This is probably the phenomenon we are dealing with here. Therefore, our research shows that experts and novices equally used words marked with positive emotions, but these two groups of participants differed according to the type of paintings to which these words refer.

We also found that novices were slightly more likely to express negative emotions than experts (although this was only a non-significant trend). Words marked with negative emotions (especially those connoting anger) appeared in statements more often concerning controversial paintings than to the beautiful and not beautiful ones. Silvia and Brown (2007) as well as Cooper and Silvia (2009) got similar results for novices in visual arts. The participants viewed controversial images and photos. It turned out that the assessment of aggression caused by these images was much higher than for the less controversial ones. This effect applied to people whose level of curiosity and interest in art was lower (Cooper & Silvia, 2009). Analyzing the phenomenon of confusion in the context of aesthetic experience, Silvia (2009) states that expertise in the arts reduces hostile emotions like anger because of a higher threshold of tolerance to unacceptable (scandalous) content. He also notes that the increase in aggression against controversial images is because the scenes presented in them contradict the aims and values of novices in the arts, who are convinced that the artist deliberately violated them.

Regardless of the expertise, all participants used words marked with positive or negative emotions more often in Emotions and Feelings instruction than in all other instructions. This result is not surprising, but it only shows that the participants conscientiously followed this instruction. To sum up, we found that the statements of experts and novices about the paintings they are viewing differ because of the involvement of affective processes, but only in the task's context (instruction) they perform and the type of painting they are viewing. Without taking these factors into account, the differences between the two groups of participants become blurred.

The second group of linguistic categories analyzed in this study are those concerning cognitive processes. We did not find the main effect of Expertise on any of the subcategories of this dependent variable. Thus, we did not confirm the hypothesis concerning a more cognitive approach to the task completion according to instructions given by experts than novices. This is an exciting result concerning tasks activating more cognitive processes, such as the formulation of the title of the painting, the discovery of its mystery, or the search for important elements in it than to the tasks aimed at reflecting on

one's own emotions and feelings evoked by the painting. However, we found some interesting interactions with the Expertise variable and the main effects of Instruction and Type of Painting variables.

Causation

The participants used words belonging to the causation subcategory most often in their statements about the paintings they viewed under the Title instruction. In their statements, they included a kind of think-aloud protocol in solving the task, which consists of capturing and expressing the essence of the viewed painting in the form of a title. As in Mullennix and Robinet (2018), we found no significant differences in visual data processing between experts and novices. Participants without formal education in the arts approached this task in the same way as the participants with formal training in art. The participants left the traces of the thought process based on the cause-and-effect result in their statements.

Insight

Mystery instruction aimed to provoke the participants to solve the cognitive task of discovering hidden meanings of paintings (Berlyne, 1960; Jakesch & Leder, 2009; Leder et al., 2004). Their statements under this instruction contained the most words from the Insight subcategory. These words denote different aspects of the mental process of understanding a complex problem or situation. Although it could be supposed that for novices in the arts, the search for mystery in a painting will be emotionally exciting (see Cupchik, 2016), their statements contained words from the cognitive subcategory of Insight as often as those of experts.

Discrepancy

This category contained the words by which we express unexpected differences between facts, conditions, or results, which has to be explained. No wonder that similarly to the previous dependent variable (Insight), these words appeared most often in the statements of both groups of participants under the Mystery instruction. Also, it turned out that in the novices' group, the words indicating perceived discrepancies in the viewed paintings appeared less frequently towards the paintings that were not beautiful than towards the beautiful ones. For the novices, beautiful paintings appeared to be more internally diverse than not beautiful ones, especially while discovering a veiled mystery in them.

Tentative and Certainty

Both subcategories represent two ends of the dimension of confidence. Most of the words expressing a high or low level of confidence were found in the statements under the Empathy instruction. Personal reference to the content

of the scene presented in the paintings resulted in an increase in using words marked both with uncertainty and certainty compared to other instructions, especially Mystery. Experts and novices also used words referring to certainty under the Emotions and Feelings instruction more frequently. Both these instructions provoked affective rather than cognitive processes. Therefore, the question arises whether the Tentative and Certainty variables were correctly included in the category of cognitive processes by the authors of the LIWC method.

Inclusive and Exclusive

Words belonging to these two subcategories show either objects, or the relationship between them, or the context in which they appear in the scene depicted in the painting. We found that the participants focused their attention on objects (inclusion) mainly under the Mystery and Important Elements instructions and beautiful rather than not beautiful and controversial paintings. In turn, the statements marked with exclusion were characteristic for novices under the Emotions and Feelings instruction and for experts under the Title instruction. These results show that the emotional resonance (background) of the painting has a more significant impact on the sensitivity of novices than of experts. The focus on the analysis of the contexts in which objects occur and on the relations between them seems to be a more typical strategy used by experts. This effect, though very subtle, appears in line with the previous research results, according to which novices have a more emotional approach to images than experts (e.g., Cupchik & László, 1992; Leder et al., 2004; Leder et al., 2014).

Summarizing the presented results of research in the context of our own hypotheses and the results of other studies aimed at characterizing cognitive and emotional processes in experts and novices in visual arts, we found that the activation of a specific mental process provoked by viewing works of figurative painting depends on the specificity of top-down instruction (setting) imposed on oneself or by the conditions of the task and the aesthetic value of the work of art. Depending on these variables, novices activate cognitive processes as if they were experts in the arts, and experts let themselves be carried away by emotions like novices. Only in one case of the Exclusive dependent variable, novices reacted more emotionally than experts and experts more cognitively than novices. However, based on the analysis of the collected data, we cannot say how the differences in verbalization of emotional/cognitive experience are related to differences in visual exploration of paintings and to the emotional experience itself (no physiological measures were collected).

As in the classic Yarbus study (1967), verified many times later (DeAngelus & Pelz, 2009; Mills, Hollingworth, van der Stigchel, Hoffman, & Dodd, 2011;

Tatler, Wade, Kwan, Findlay, & Velichkovsky, 2010), the top-down setting using different instructions to view the same painting significantly changes the parameters of their eye movement, so the instructions we give significantly alter the connotation of the viewers' statements about the painting they are viewing. Some of these instructions provoke cognitive and other emotional processes to a greater extent, regardless of the formal education of the participants in the visual arts.

If we are critical of the results got, we should not overlook the following. First, the operationalization of the Expertise variable may raise some doubts. In this study, we assumed that the basis for the selection of participants to the group of experts was a formal education in the visual arts. This criterion is quite commonly accepted for selecting experts in empirical aesthetics research. There are also reports that it does not differentiate people enough in terms of their competence in the art (Francuz, Zaniewski, Augustynowicz, Kopiś, & Jankowski, 2018; McSorley & McCloy 2011; Mullennix & Robinet, 2018). Maybe these competencies are not at all correlated with art education, as shown by the examples of many outstanding painters who have not graduated from any fine art schools (Gombrich, 1995). We should, therefore, leave the question of who an expert in visual arts is without a satisfactory answer for the time being.

Second, although there are good reasons to believe that people can see paintings from different points of view (e.g., as the basis for the operationalization of the Instruction variable), it would be worthwhile to verify this claim empirically in separate studies. Perhaps the list of these instructions is much more extensive, but maybe some of them are incorrectly formulated and, as a result, we collect artifactual data. We have already attempted to determine to what extent our proposed instructions reflect the mental processes caused by the instructions for the aesthetic evaluation of a work of art, and we intend to publish its results soon (Francuz, Jankowski, & Augustynowicz, in prep.).

The third doubt relates to the operationalization of the Type of Painting variable. We have carefully selected the images for the experiment, but beautiful paintings are not equally beautiful for everyone, and controversial paintings for someone may be equally beautiful or not. It is possible to adopt an approach according to which the aesthetic value of the presented paintings is determined by the participants of the experiment, and not in separate selection studies. We have analyzed the data according to this approach, but it turned out that the results are much less precise than with our method of analysis. Therefore, we stayed with a more classical methodological solution. This is even more justified because, as we pointed out earlier, the data collected in this experiment in response to the aesthetic evaluation instruction matched the data collected in a separate study (see Stimuli section).

Finally, the method of linguistic analysis of the verbal statements concerning the images the participants are watching may raise some doubts. It is not the case that LIWC is the wrong method for this kind of analysis. It is only a matter of whether the verbalization of one's own emotional or cognitive experiences connected with the watched images reflects the essence of these experiences. Especially when we ask about emotions and feelings, whether we do not reduce them to the form that is allowed to be expressed by language. In other words, does an instruction aimed at verbalizing one's emotional state eliminate it? The credibility of introspective data is an old problem that, so far, has still been controversial. However, like Ericsson and Simon (1980) as well as Tausczik and Pennebaker (2010), we believe that reaching the deep layers of the human mind through the analysis of the language in which they are verbalized is not only possible but also heuristic and fertile and opens up new research perspectives.

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Appendix

Paintings used for the experiment:

Beautiful:

[1] Carl Holsøe, *Reflections*, date unknown, oil on canvas, 90.9 × 95.6 cm, private collection.
[2] James Tissot, *The Traveller*, 1883–85, oil on canvas, dimensions unknown, Leeds Museums and Galleries, Leeds.

Not beautiful:

[3] Frans Hals, *Malle Babbe (Portrait of an old witch from Haarlem)*, ca. 1628–40, oil on wooden board, 75 × 64 cm, Gemäldegalerie [Picture Gallery], Berlin.
[4] Pierre-Auguste Renoir, *Girl Wiping Her Feet*, 1890, oil on canvas, dimensions unknown, private collection (Grover Magnin, San Francisco.

Controversial:

[5] Caravaggio, *Crucifixion of St. Peter*, 1600, oil on canvas, 239 × 175 cm, Basilica of Santa Maria del Popolo, Rome.
[6] Caravaggio, *Judith Beheading Holofernes*, 1598–99, oil on canvas, 145 × 195 cm, Galeria Nazionale d'Arte Antica, Rome.
[7] Jan Vermeer, *Girl with a Pearl Earring*, ca. 1664, oil on canvas, 44.5 × 39 cm, Royal Gallery of Painting (Mauritshuis), The Hague.
[8] Ilya Repin, *Unexpected Visitors*, 1884–88, oil on canvas, 160.5 × 167 cm, Tretyakov Gallery, Moscow.

In the instructions:

[9] Alexandre Cabanel, *Cleopatra Testing Poison on Condemned Slaves*, 1887, oil on canvas, 87.6 × 148 cm, Royal Museum of Fine Arts, Antwerp.