

## The Examination of Aesthetic Evaluations of Female Portraits in Pablo Picasso's Oeuvre<sup>1</sup>

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### Abstract

The issue of this study was to examine whether aesthetic evaluations of female portraits from various painting periods in Pablo Picasso's oeuvre differ in terms of arousal potential (AP) and primordial content (PC). Additionally, this study examines the trends of aesthetic evaluations in a time perspective, i.e., whether they correspond to the assumptions of Colin Martindale's evolutionary theory. The research was conducted on a convenient sample of 55 young adults ( $M = 23.9$  years,  $SD = 2.46$ ). The stimulus material consisted of 16 (4x4) female portraits belonging to Picasso's blue period, rose period, analytic cubism, and synthetic cubism. The scales of arousal potential (AP) and primordial content (PC) were used to measure aesthetic evaluations. One-way ANOVA results indicated statistically significant differences in the expression of AP ( $F(3, 876) = 44.16, p = .000, \eta^2 = .142$ ) and PC ( $F(3, 876) = 176.61, p = .000, \eta^2 = .388$ ) depending on Picasso's artistic periods. Post hoc Tukey test showed statistically significant differences in the values of these dimensions within individual periods. This means that the aesthetic evaluations of the respondents clearly separate these four periods. Also, the trends of aesthetic evaluations of female portraits from different periods of Pablo Picasso's oeuvre were examined as a function of time, i.e., the order in which the portraits were created. A statistically significant expected trend of moderate linear growth was obtained in AP assessments ( $R^2 = .57, F(3, 876) = 44.2, p < .001$ ). In the estimation of PC ( $R^2 = .897, F(3, 876) = 177, p < .001$ ) the trend is also significant, but the interpretation of the results should be cautious due to the small number of stimuli within each period. It is necessary to conduct more detailed research, on a larger sample of respondents, but also with a larger sample of stimuli. It was also useful to conduct a qualitative analysis in order to delve deeper into the problem of aesthetic experience and compare the results with the claims of theorists and art historians.

*Keywords:* arousal potential, primordial content, female portraits, Pablo Picasso

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Acknowledgement: This study was supported by the Ministry of Science, Technological Development and Innovations of the Republic of Serbia (Contract No. 451-03-66/2024-03), and prepared as a part of the project *Popularization of science and scientific publications in the sphere of psychology and social policy*, conducted at the University of Niš – Faculty of Philosophy (No. 336/1-6-01).

\*Please cite as: Milićević, N., & Đorđević, M. (2024). The Examination of Aesthetic Evaluations of Female Portraits in Pablo Picasso's Oeuvre. *Godišnjak za psihologiju*, 21, 67-84.

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## **The Examination of Aesthetic Evaluations of Female Portraits in Pablo Picasso's Oeuvre**

The first understandings of aesthetic experience and aesthetic judgments date back to ancient Greece, and later they were explored by philosophers, psychologists, aestheticians, and others. They all sought the structure of aesthetic experience, which led to the development of many theories (Milićević, 2019). One of the most well-known is Martindale's theory of aesthetic evolution (1990), which has been tested in many studies and has always shown partial success in explaining the phenomenon of aesthetic experience. The aim of this research was to examine whether the aesthetic judgments of female portraits from different artistic periods in the works of Pablo Picasso differ in terms of arousal potential and primordial content. Additionally, this study examined the trends in aesthetic judgments over time and whether they correspond to the assumptions of Colin Martindale's theory of aesthetic evolution.

### **Colin Martindale's Theory of Aesthetic Evolution**

Colin Martindale is the creator of the theory of aesthetic evolution, which has changed the existing knowledge in the history of art. In his seminal work "Clockwork Muse: The Predictability of Artistic Change", Martindale (1990) approaches the history of art in an original and empirical way. Unlike classical art historians who considered trends in artistic styles to be random (e.g. Elliot, 1988, as cited in Martindale, 1990, p.2), he believes they are regular, repeatable, and describes them using regression equations. To confirm his standpoint, he examined microstyles, i.e., the individual careers of specific artists, using semantic differential scales on samples composed of "naive" subjects, i.e., subjects without artistic education (Martindale, 1990; Milićević, 2019, 2024).

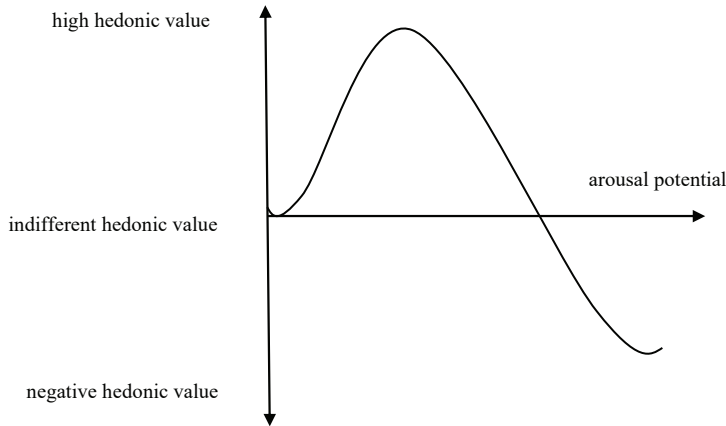
In his theory, Martindale (1990) starts from Berlyne's concept of *arousal potential* and the Wundt curve. Berlyne (1971) believed that the preference for a stimulus depends on its arousal potential. Arousal potential is defined as the amount of activation a stimulus induces and consists of the following factors: collative properties (novelty, complexity, surprise, and unpredictability), ecological factors (signal value and meaning), and psychophysical characteristics of the stimulus (pitch, color, and intensity). People tend to prefer stimuli with a moderate level of arousal potential to those with extremely high or low arousal potential. The relationship between arousal potential and hedonic value is represented by the Wundt curve, which has the shape of an inverted U (Figure 1).

Artists do not strive to create works that are identical to already existing ones, so diversity, incongruence, novelty, unpredictability, and other collative variables are the main characteristics of art. An artwork must constantly evolve in order to survive and not succumb to habituation (Martindale, 1990). Habituation is a concept from behavioral learning theory and can be defined as a decrease in an organism's reactivity

when exposed to repeated stimuli. Therefore, the artist is forced to continually increase the arousal potential of his works of art according to the principle of least effort in order to neutralize habituation (Martindale, 1990, Milićević, 2019, 2024).

**Figure 1**

*The Relationship between arousal potential and hedonic value* (Berlyne, 1971, Martindale, 1990; Ognjenović, 1997)



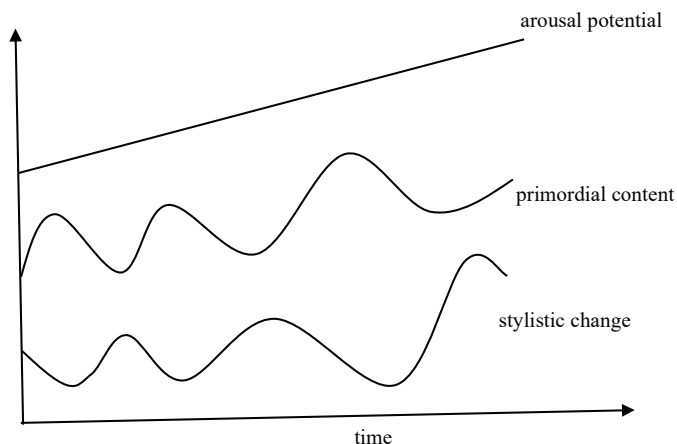
In addition to arousal potential, Martindale (1990) mentions another factor in his theory of aesthetic evolution, which is *primordial content*. This primarily refers to originality and determines the direction of aesthetic evolution. Many theorists have previously discussed it, but under different names. Ernst Kris (1952) believed that original ideas consist of two processes of inspiration - one involving regression and the other involving a state of elaboration. Freud et al. (1954) spoke of secondary and primary processes of cognition. The secondary process of cognition is logical, reality-oriented, while the primary process of cognition is irrational, freely associative, akin to dream thought, daydreaming, and sometimes close to madness. Berlyne (1965, as cited in Milićević, 2019) distinguishes between autistic and directed thinking. Jung uses the terms *logos* and *eros*, while Nietzsche distinguishes between Apollonian and Dionysian thought (Martindale, 1990).

Martindale (1990) differentiated between primordial (initial) thought versus conceptual thought, believing that all our thoughts exist on a continuum from primordial thought on one side to conceptual thought on the other. When we discover differences, our thought is more conceptual, and when we find similarities, our thought tends toward primordality. Primordial thought is non-directive and freely associative, increasing the likelihood of combining new elements and thereby enhancing the originality of the artwork. Artists tend to increase primordial content, i.e., originality, which in turn increases arousal potential and prevents habituation. The increase in primordial content cannot go on indefinitely; it reaches a maximum, after which there is a “loosening” of stylistic rules, leading to changes in artistic style (Martindale, 1990). Arousal potential gradually increases throughout the history

of art, while primordial content also increases but only to a certain limit. Stylistic changes and primordial content are in opposite phases, meaning that when one rises, the other falls, and vice versa (Figure 2).

**Figure 2**

*The Relationship between arousal potential, primordial content, and stylistic changes over time (Martindale, 1990)*



Martindale (1990) tested his theory on numerous examples of the history of painting from different areas of Europe and America, Gothic architecture, Egyptian paintings, Greek vases, world literature, European music of different eras, and even New England gravestones. He also examined individual artistic careers of various famous artists such as Beethoven, Chopin, Grieg, Rembrandt, Picasso, Dryden, Wordsworth, Yeats, and many others. He managed to find regularity in the dynamics of arousal potential and primordial content everywhere, with peaks of primordial content coinciding with the beginnings of new styles. Thus, Martindale (1990) succeeded in discovering regularities in stylistic changes throughout the history of art in an original and empirical way.

**The Art of Pablo Picasso**

Pablo Picasso was a versatile Spanish artist, one of the greatest painters, graphic artists, and sculptors of the 20th century (McCully, 2021; Trifunović, 1994). His interest in art manifested very early; the first word he spoke was “piz” from the Spanish “lapis,” meaning pencil, and by the age of thirteen, he was creating works comparable to those of Renaissance painters. He did not care for formal education, so he did not complete art academy, but this did not prevent him from becoming an excellent artist. Besides being a great artist, he is, along with Georges Braque, considered one of the founders of the art movement known as Cubism. His creative opus is extremely large, numbering around 80,000 works, making him the artist

with the largest creative output in the history of art according to the Guinness World Records. His creative work can be chronologically divided into several periods, each marked by specific influences, dominant themes, and an increasing approach to Cubism. Some of the well-known periods in his work are: the Blue Period (1901-1904), the Rose Period (1904-1906), Analytical Cubism (1909-1912), and Synthetic Cubism (1912-1914), to which he remained faithful throughout his career, perfecting it with ongoing changes in art development (Požgaj, 2020; Trifunović, 1994).

Picasso's Blue Period (1901-1904) is characterized by monochromatic paintings in shades of blue and blue-green, with occasional inclusion of other colors. Dominant themes in this period include the blind, beggars, and lonely outcasts he painted on the streets of Barcelona, as well as the theme of motherhood, inspired by visits to a women's prison in Paris and observing prisoners with their children (McCully, 2021). His paintings from this period reflect feelings of sadness, melancholy, and desolation, mirroring his mood following the suicide of his close friend Carlos Casagemas. During the Rose Period (1904-1906), Picasso met his lover Fernande Olivier, which infused his work with more enthusiasm and vigor. His works from this period are characterized by the dominance of pink and orange colors, featuring Fernande, whom Picasso called his muse, along with many circus figures, acrobats, and harlequins, typical of the French milieu. His paintings become much more positive, reflecting a joyous and optimistic mood.

Analytical Cubism (1909-1912) is an art style that Picasso developed together with Georges Braque, resulting in similar works between the two. During this period, Picasso used monochromatic and neutral colors, mainly brown, analyzing and fragmenting objects into parts, giving the impression of broken spaces and objects (Požgaj, 2020). His paintings from this period are impersonal, monochromatic, ascetic, and devoid of psychological depth. Synthetic Cubism (1912-1914) represents the further development of Cubism. In Synthetic Cubism, objects are no longer dissected but instead, one characteristic part of an object is combined with a part of another object to form a new whole (Milićević, 2005). This synthesis inevitably led to abstraction, but to avoid this and maintain contact with reality, Cubists used new means such as typography and collage. Picasso was the first to glue paper fragments, wallpapers, and pieces of newspaper articles onto his paintings, introducing collage into fine art. During this period, geometric composition became very visible in his paintings, with themes often including musicians, still lives, and portraits. Picasso remained faithful to Cubism throughout his career, continuously perfecting it, enriching it with new themes, and integrating it with emerging art movements such as Surrealism. The influence of Surrealism on his work can be seen in the dissection of the human body, disproportionate representation of content, and the introduction of erotic elements in his works (Požgaj, 2020; Trifunović, 1994).

## Review of Previous Research

Martindale was one of the first to attempt and succeed in answering the question: “Can regularities in stylistic changes be empirically tracked and discovered?” His work on this problem was dedicated and thorough, so starting from a simple question, he developed his theory, which is still used today as a foundation for many studies. Martindale applied the theory of aesthetic evolution while studying the individual artistic careers of Beethoven, Chopin, Grieg, Rembrandt, Picasso, Dryden, Wordsworth, Yeats, and others, and he managed to find regularities in the dynamics of arousal potential and primordial content, with peaks of primordial content coinciding with the beginnings of new styles. In Picasso’s work, based on the change in arousal potential, i.e., its linear increase, he successfully distinguishes the blue, pink, and other periods or microstyles (Martindale, 1990).

In our region, Milićević et al. (2016) conducted a study examining changes in Van Gogh’s landscape painting technique during five periods of his work. The results of this study did not confirm all the hypotheses according to the theory of aesthetic evolution, but were consistent with the characteristics of individual periods and the assertions of art critics and historians.

Arnheim (1962), Weisberg (2004), and Milićević (2001, 2005) attempted to find regularities in the process of the genesis of Picasso’s *Guernica* sketches. Arnheim based his research on qualitative analysis, while Weisberg and Milićević used quantitative methods. Weisberg (2004) concluded that the creative process largely appears as an elaboration of a basic idea rather than the creation of numerous different ideas. Milićević (2005) tracked changes in arousal potential and primordial content during the creation of the work and found regularities consistent with Martindale’s theory. Aaron Kozbelt (2006) used a similar approach, analyzing 22 sketches of Matisse’s *Large Reclining Nude* from 1935, concluding that art students and non-art students apply different patterns of aesthetic judgment. Art students appreciate Matisse’s personal opinion more and they are better at recognizing fluctuations in quality during the development of the painting (Kozbelt, 2006). Despite numerous transformations that occur during the creation of an artwork, the consistency of the painting as a whole is noticeable throughout its development. Creators are believed to have good control over the complex creative process, with metacognition being a very important component of effective problem-solving, even in complex, ill-defined problems (Jaarsveld & Van Leeuwen, 2005).

Besides exploring the regularities in the process of the genesis of the artwork as a whole, there are also attempts to explain the genesis of specific details within an artwork. Milićević (2001) conducted research on the genesis of the bull’s head detail in Picasso’s *Guernica* and obtained results consistent with Martindale’s theory of aesthetic evolution. Subsequent studies investigated the genesis of the horse’s head detail and obtained identical results (Milićević, 2005; Milićević et al, 2010). However, studies examining the genesis of the woman’s head detail obtained results only slightly consistent with Martindale’s theory, where the arousal potential increased to the point that some sketches became unappealing (Milićević, 2005;

Milićević et al., 2012). The reasons cited the fact that the sketches of the woman's heads resulted in four figures in the final Guernica.

Starting from Martindale's evolutionary theory (1990), we set the following goals in our research:

1) To examine whether the aesthetic evaluations of female portraits of four different periods in the oeuvre of Pablo Picasso differ in terms of the dimensions of arousal potential (AP) and primordial content (PC).

2) To examine the trends of these aesthetic evaluations of 16 portraits in a time perspective and whether they correspond to the assumptions of Colin Martindale's theory of aesthetic evolution (1990).

#### *Hypotheses*

H1. In accordance with Martindale's theory, we assumed that the aesthetic evaluations of AP and PC female portraits from the four periods of Picasso's oeuvre (blue period, pink period, analytical and synthetic cubism) will statistically significantly differ from each other. We assume that based on the AP and PC assessments, we would clearly distinguish these four microstyles in Picasso's individual career.

H2 Based on the evolutionary theory (Martindale, 1990) regarding AP and PC trends in time perspective, we can assume the following:

a) The arousal potential (AP) of Picasso's 16 female portraits will grow monotonously and moderately over time.

b) The measures of primordial content (PC) Picasso's 16 female portraits will also increase as a function of time, but not linearly. PC "should exhibit cycles of increasing and decreasing. Periods when PC decreases should coincide with periods of stylistic change." (Martindale, 1990. p.69).

c) We can also assume that the estimates of AP and PC portraits of the blue and pink periods should be lower than the estimates of AP and PC portraits of the analytical and synthetic cubism periods.

## **Method**

### **Sample and Procedure**

The research was conducted online. Ethical principles were followed in the research, which included: voluntary participation, informed consent, anonymity, confidentiality, the ability to communicate about the results, the ability for respondents to stop participating in the research at any time. All important information for participating in the study and completing the questionnaire was given to participants. Participants were asked to evaluate images presented to them without time constraints, based on certain attributes. The sample is a convenience consisting of 55 young adults, ranging from 18 to 29 years old. Initially, there were 57 participants, but two were excluded from further analysis due to inadequate questionnaire completion. The

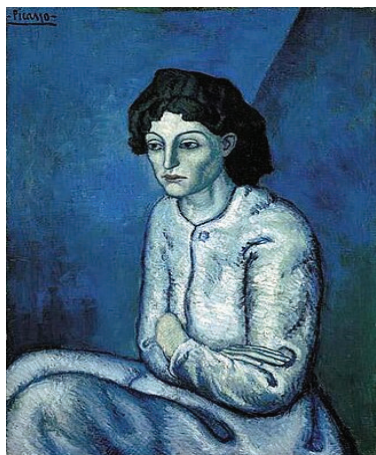
sample predominantly consisted of females, with 41 female (74.5%) participants, and 14 (25.5%) males. The average age of participants was 23.9 years ( $SD = 2.46$ ), with an age range from 20 to 29 years. Only 4 respondents (7.3%) had some artistic education (Art school or faculty of Art), while 51 (92.7%) did not.

## Stimuli

The stimulus material consists of 16 (4x4) female portraits from different periods of Pablo Picasso's work (Image 1).

### Image 1

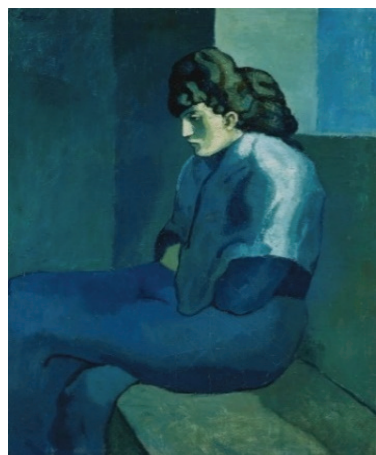
#### *Portraits of Women - Blue Period*



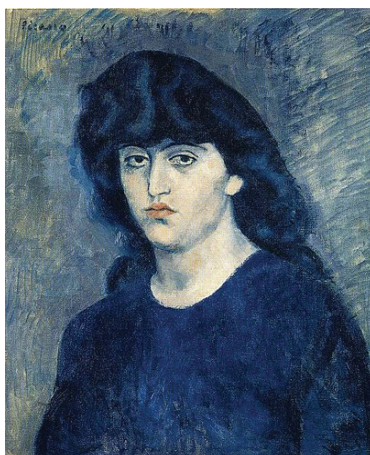
1901 – Woman with Folded Arms  
(Private collection)



1902 – Woman with Bangs  
(The Baltimore Museum of Arts, Maryland)



1903 – Melancholy woman  
(The Detroit Museum of Art, Michigan)



1904 – Portrait of Suzanne Bloch  
(Sao Paulo Museum of Art)



The images are divided into four categories according to the period they belong to: the blue period, the pink period, analytical cubism, and synthetic cubism. Each category contains 4 images, presented in chronological order:

*Blue period:*

1. Pablo Picasso, 1901, *Woman with Folded Arms* (Private collection)
2. Pablo Picasso, 1902, *Woman with Bangs* (The Baltimore Museum of Art, Maryland)
3. Pablo Picasso, 1902-1903, *Melancholy woman* (The Detroit Museum of Art)
4. Pablo Picasso, 1904, *Portrait of Suzanne Bloch* (Sao Paulo Museum of Art)

*Rose period:*

5. Pablo Picasso, 1904, *Woman with a red shawl (Suzanne Bloch)* (Private collection)
6. Pablo Picasso, 1905, *Mother and Child* (Private collection)
7. Pablo Picasso, 1905-1906, *Portrait of Gertrude Stein* (Metropolitan Museum of Art, New York)
8. Pablo Picasso, 1906, *Nude with Joined Hands* (Art Gallery of Ontario)

*Analytical Cubism:*

9. Pablo Picasso, 1909, *Head of a Woman* (The Art Institute of Chicago)
10. Pablo Picasso, 1910, *Girl with a Mandolin* (Museum of Modern Art, New York)
11. Pablo Picasso, 1911, *Afternoon tea* (Philadelphia Museum of Art)
12. Pablo Picasso, 1912, *Woman sitting in an armchair* (Private collection)

*Synthetic Cubism:*

13. Pablo Picasso, 1912/1913, *Woman in an Armchair* (Collection Mrs. Victor W. Gantz, New York)
14. Pablo Picasso, 1913, *Woman with a shirt sitting in a chair* (Metropolitan Museum of Art, New York)
15. Pablo Picasso, 1913-1914, *Head of The Girl with a Hat Topped with*

*Raisins* (Private collection)

16. Pablo Picasso, 1914, *Portrait of a Girl* (Musee National d'Art Moderne, Centre Georges Pompidou, Paris)

The pictures were presented in chronological order (according to the date of creation). Martindale (1990) used a chronological order in the presentation of stimuli and not a random one, because such an order best simulates what really happened during stylistic changes during history and an individual artistic career.

## Instruments

**Arousal Potential (AP; Martindale, 1990)** and **Primordial Content (PC; Martindale, 1990)** were developed within the framework of Martindale's theory of aesthetic evolution. These scales are of the semantic differential type, consisting of

pairs of opposing adjectives or attributes. Respondents indicate their agreement with one of the adjectives by selecting a value ranging from 1 to 7. The Arousal Potential (AP) scale includes the following pairs of opposing adjectives: simple-complex, passive-active, and weak-strong. The Primordial Content (PC) scale includes pairs such as real-unreal, earthly-otherworldly, and natural-unnatural. In the current sample, internal consistency reliability has been found to be satisfactory with the following values: Arousal Potential ( $\alpha = .775$ ;  $\Omega = .778$ ), and Primordial Content ( $\alpha = .947$ ;  $\Omega = .947$ ).

## Results

**Table 1**

*Descriptive statistical data of dimensions of aesthetic experience*

	<i>M</i>	<i>Med</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Sk</i>	<i>Ku</i>
Arousal potential	4.04	4.00	1.45	1	7	-.027	-.647
Primordial content	3.67	3.67	1.98	1	7	.183	-1.227

*Note.* Sk – skewness, asymmetry coefficient; Ku – kurtosis, elongation coefficient.

Table 1 shows that the range of respondents' answers on the mentioned scales is from 1 to 7. The distribution of measures on the arousal potential variable does not deviate from normal (the range of skewness and kurtosis values is +/-1). However, the distribution of measures on the primordial content variable gives a platykurtic distribution, given that the kurtosis value is less than -1. This indicates increased dispersion, i.e., the scattering of the distribution of results.

To examine whether there are differences in the expression of the dimensions of the aesthetic experience of female portraits in different periods of Pablo Picasso's work: blue period, rose period, analytical cubism, and synthetic cubism, a one-way ANOVA was used.

**Table 2**

	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>p</i>	$\eta^2$
Arousal potential (AP)	44.16	3	876	.000	.142
Primordial content (PC)	176.61	3	876	.000	.388

*Differences in the expression of dimensions of aesthetic experience of female portraits during the creative periods of Pablo Picasso (One-Way ANOVA)*

*Note.*  $\eta^2$  - eta squared (measure of effect size).

Based on the results (Table 2), it can be concluded that there is a statistically significant difference in the expression of arousal potential in female portraits during the blue period, rose period, analytical cubism, and synthetic cubism. There is also a statistically significant difference in the expression of primordial content in female portraits during the four periods.

Since ANOVA only indicates the presence of differences but does not specify between which periods the differences in the dimensions of the aesthetic experience exist, a post hoc Tukey test was used to detail these differences.

Table 3 shows that there is a statistically significant difference in the expression of arousal potential in favor of the rose period compared to the blue period, in favor of analytical cubism compared to the blue period, and in favor of synthetic cubism compared to the blue period. There is also a statistically significant difference in the expression of arousal potential in favor of analytical cubism compared to the rose period and in favor of synthetic cubism compared to the rose period.

**Table 3**

*Results of the Tukey test for arousal potential values (AP) of female portraits in different creative periods of Pablo Picasso*

	M	SD	SE		Blue period	Rose period	Analytical cubism	Synthetic cubism
Blue period	3.29	1.27	.086	(mean difference)	—	-.51***	-1.24***	-1.33***
Rose period	3.80	1.35	.091	(mean difference)		—	-.74***	-.74***
Analytical cubism	4.53	1.41	.095	(mean difference)			—	.009
Synthetic cubism	4.53	1.36	.092	(mean difference)				—

Note. \*\*\*  $p < .001$ ; SE – standard error.

**Figure 3**

*Arousal potential of female portraits in different creative periods of Pablo Picasso*

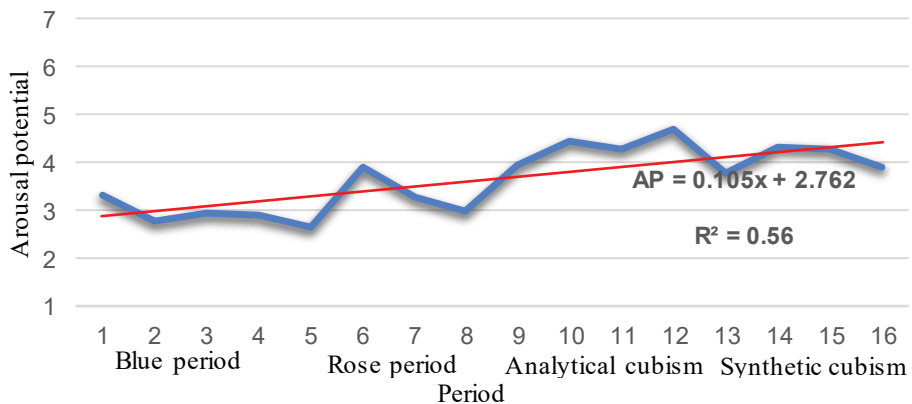


Figure 3 shows that a statistically significant trend was obtained in the aesthetic evaluations of arousal potential, indicating that the evaluations of arousal potential increase linearly over time from the blue period to analytical cubism. However, an unexpected drop in arousal potential is observed during the period of synthetic cubism. The sequence, i.e., the date of creation of the paintings, proved to be a good predictor of the arousal potential evaluations of 16 female portraits from Picasso's blue period, rose period, and analytical cubism:  $R^2 = .566$ ,  $F(3, 876) = 44.2$ ,  $p < .001$ . The corresponding linear equation can explain 56.6% of the variance.

Table 4 shows that there is a statistically significant difference in the expression of primordial content in favor of analytical cubism compared to the blue period and in favor of synthetic cubism compared to the blue period. There is also a statistically significant difference in the expression of primordial content in favor of analytical cubism compared to the rose period and in favor of synthetic cubism compared to the rose period. Additionally, there is a statistically significant difference in the expression of primordial content in favor of synthetic cubism compared to analytical cubism.

**Table 4**

*Results of the Tukey test for primordial content values (PC) of female portraits in different creative periods of Pablo Picasso.*

	<i>M</i>	<i>SD</i>	<i>SE</i>		Blue period	Rose period	Analytical cubism	Synthetic cubism
Blue period	2.38	1.34	.090	(mean difference)	—	-.36	-1.76***	-3.06***
Rose period	2.74	1.54	.104	(mean difference)		—	-1.40***	-2.70***
Analytical cubism	4.13	1.90	.128	(mean difference)			—	-1.31***
Synthetic cubism	5.44	1.41	.095	(mean difference)				—

*Note.* \*\*\*  $p < .001$ ; SE – standard error.

**Figure 4**

*Primordial content (PC) of female portraits in different creative periods of Pablo Picasso*

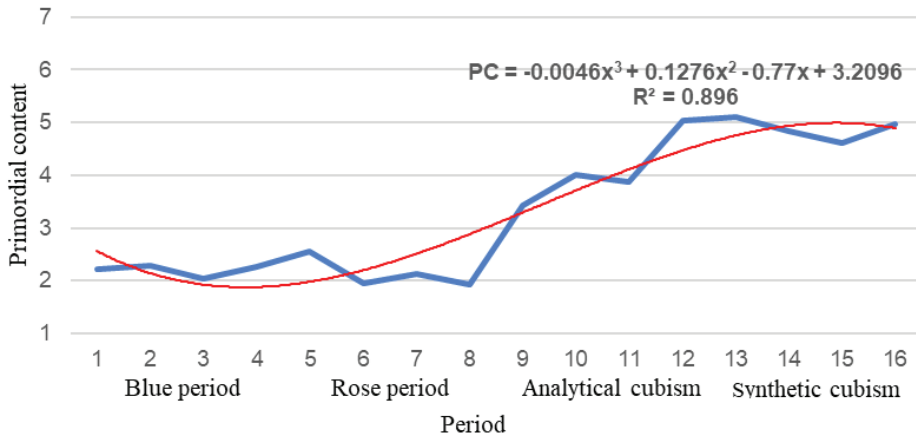


Figure 4 shows that a statistically significant trend was obtained in the aesthetic evaluations of primordial content, indicating that evaluations of primordial content increase linearly over time but also vary within individual periods. There is no recorded difference in primordial content between the blue period and the rose period. The order, i.e., the date of creation of the paintings, proved to be a good predictor of the primordial content evaluations of 16 female portraits from Picasso's blue period, rose period, analytical and synthetic cubism:  $R^2 = .897$ ,  $F(3, 876) = 177$ ,  $p < .001$ . The corresponding cubistic equation can explain 89.7% of the variance.

## Discussion

This study examined the existence of differences in the expression of aesthetic experience dimensions depending on the period of Pablo Picasso's creative work. Additionally, it investigated the trends of aesthetic evaluations over time and whether they align with the assumptions of Colin Martindale's theory of aesthetic evolution.

(1) The main assumption that the aesthetic evaluations of AP and PC of female portraits from the four periods of Picasso's oeuvre (blue period, rose period, analytical and synthetic cubism) will differ statistically significantly was partially confirmed.

The styles differ from each other in relation to AP estimates except when dealing with synthetic and analytical cubism (Table 3). Portraits from analytical and synthetic cubism evoke an equal arousal potential that is higher than the female portraits of the blue and rose periods. The arousal of female portraits grows successively during four periods. The lowest AP is in the blue period, higher in the rose period, and the highest in the period of analytical and synthetic cubism. These findings are consistent with previous findings (Martindale, 1990; Milićević & Jovanović, 2013, 2015) and with

the assumptions of evolutionary theory. The results also correspond to the claims of theorists and art historians (Trifunović, 1994).

When it comes to the primordial content (PC), the hypothesis that female portraits from the four periods will differ was fully confirmed. Blue period portraits have the lowest PC ratings, rose period portraits have slightly higher PC ratings, followed by analytical cubism portraits, and synthetic cubism portraits have the highest PC ratings. This is consistent with the assumptions and results of Colin Martindale's (1990) evolutionary theory. Based on the evaluation of the primordial content, the mentioned four periods in the oeuvre of Pablo Picasso can be clearly distinguished.

(2) We examined the trends of aesthetic evaluations of arousal potential (AP) and primordial content (PC) of 16 portraits in a time perspective. The results correspond to the assumptions of Colin Martindale's theory of aesthetic evolution (1990). Sixteen female portraits were presented to respondents in chronological order by date of creation.

According to evolutionary theory, it was assumed that estimates of arousal potencies (AP) will gradually increase as a function of order (i.e., date) of creation. Regression analysis showed that the order of creation of 16 female portraits by Picasso is a good predictor of arousal potential (AP) assessment. The corresponding linear equation can explain 56.6% of the variance AP in function of the order of creation (Figure 3).

Despite the oscillations of AP in certain portraits, especially in the blue period, the trend is significant and corresponds to the assumptions of Martindale's evolutionary theory. Over time, the artist gradually increases the arousal potential of his works in order to counteract the habituation of the audience. The stagnation and decline of AP in the blue period are consistent with the theme and content of the paintings. The blue period is characterized by monochromatic images with shades of blue and blue-green. The dominant themes in the paintings are quite depressing. Portraits of this period express feelings of sadness and melancholy. All this does not cause high excitement among the audience.

In the rose period, themes and colors are brighter, so there is an increase in AP and later a certain decrease. In analytical cubism AP increases and in synthetic cubism it slowly decreases. Nevertheless, despite these oscillations, the AP growth trend is significant and corresponds to Martindale's (1990) and our assumptions.

The assumption that the primordial content (PC) of Picasso's 16 female portraits will grow as a function of the time (order) of creation has been confirmed. The corresponding cubist equation explains 89% of the variance of PC as a function of time.

Evolutionary theory, based on its numerous studies of long periods of art history (Martindale, 1990), predicts that this growth will take place with oscillations. The peaks of PC growth and the beginnings of its decline correspond to the establishment of a new style. The trends of stylistic changes and primordial content are in opposite phases (Figure 2). After a style change, PC should decline because the novelty of the style itself brings a high degree of arousal.

On the examples of Picasso's 16 female portraits in our research, this part of the assumption of evolutionary theory is not confirmed everywhere. Oscillations exist, but they do not coincide with the beginnings of new periods. Only in the portraits of synthetic cubism (portraits 13-16) is the decline of PC visible with the establishment of this style.

The reason for such findings can be primarily of a methodological nature. The small number of stimuli within each period (only 4) is not enough to register such changes. Another reason may lie in the specifics of the painting genius Pablo Picasso, who in each new painting brings something new that significantly deviates from the already established style.

We also assumed that the evaluations of Picasso's female portraits from the blue and pink period (portraits 1-8) will differ significantly from the portraits of analytical and synthetic cubism (portraits 9-16). Cubist paintings should have a higher arousal, but above all a higher primordial content. Picasso's cubist paintings approach abstraction in contrast to the realistic paintings of the blue and rose period. They seem surreal, supernatural and otherworldly. The assumption was made based on some earlier research (Martindale, 1990; Milicevic, 2005; Milicevic & Jovancevic, 2019). The obtained results confirm this assumption. Starting from the ninth portrait, the primordial content grows rapidly and is significantly higher than in the realistic portraits of the blue and pink periods. Arousal also increases, but somewhat more moderately

One of the limitations of this research pertains to the representativeness of the sample of stimuli and the sample of respondents. For more reliable results, it is recommended to include a larger number of female portraits from different periods of Pablo Picasso's creative work, as well as those from lesser-known periods. Additionally, future researchers should consider including other types of paintings besides female portraits, such as male portraits, children's portraits, still lives, group scenes, and more. Furthermore, it is important to remember that the periods in an artist's work overlap, blend, and separate, so care must be taken to select paintings that are true representatives of a specific creative period.

The respondents in this study were mostly without artistic education, and only a small number of them were engaged in art. Future research could aim to create a representative sample of respondents balanced between those with and without artistic education or between those who engage in art and those who do not. Considering that artists have a different perspective on art, including the artistic population in the sample could yield results that resolve existing ambiguities and contradictions in current research. Additionally, female respondents constituted the majority of the sample. This could also encourage future researchers to include a gender-balanced sample to determine whether men and women have identical aesthetic experiences or if their artistic experiences are influenced by gender differences.

## Conclusion

The results of this study are consistent with previous research. They largely confirm the assumptions of evolutionary theory. Martindale was primarily engaged in empirical research of stylistic changes during long periods of art history of different cultures using a large number of stimuli. Our results confirm that the laws of the theory of aesthetic evolution can also be applied in the field of individual artistic careers, and this reflects the contribution of our research. The dynamics of expression of arousal potential and primordial content is also visible in the example of female portraits during the four periods of Picasso's individual artistic career.

The obtained results do not fully confirm all the assumptions of Martindale's theory. This especially refers to the possibility of recording the beginnings of new microstyles in Picasso's oeuvre. The obtained results do not represent anything new in relation to the subjective claims of numerous theorists and art historians. However, the greatest value of this study and similar studies lies in the fact that the conclusions were reached empirically.

Given that previous studies do not fully confirm Martindale's theory of aesthetic evolution, it is necessary to conduct more detailed and thorough research, including qualitative studies, in order to delve deeper into the issue of aesthetic experience.

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## Ispitivanje estetskih procena ženskih portreta u stvaralaštvu Pabla Pikasa

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### Apstrakt

Zadatak ove studije bio je da se ispita da li se estetske procene ženskih portreta iz različitih slikarskih perioda u opusu Pabla Pikasa razlikuju u pogledu potencijala pobuđenosti (AP) i primordijalnog sadržaja (PC). Pored toga, ova studija ispituje trendove estetskih evaluacija u vremenskoj perspektivi, odnosno da li one odgovaraju pretpostavkama evolucione teorije Kolina Martindejla (1990). Istraživanje je sprovedeno na prigodnom uzorku od 55 odraslih osoba ( $M = 23.9$  godina,  $SD = 2.46$ ). Stimusni materijal se sastojao od 16 (4x4) ženskih portreta koji pripadaju Pikasovom plavom periodu, ružičastom periodu, analitičkom kubizmu i sintetičkom kubizmu. Za merenje estetskih procena korišćene su skale potencijala pobuđenosti (AP) i primordijalnog sadržaja (PC). Rezultati jednosmerne ANOVA pokazuju statistički značajne razlike u ekspresiji AP ( $F(3,876) = 44.16, p = .000, \eta^2 = .142$ ) i PC ( $F(3,876) = 176.61, p = .000, \eta^2 = .388$ ) u zavisnosti od Pikasovog umetničkog perioda. Post hoc Tukey test je pokazao statistički značajne razlike u vrednostima ovih dimenzija između pojedinih perioda. To znači da estetske ocene ispitanika jasno razdvajaju ova četiri perioda. Takođe, razmatrani su trendovi estetskih procena ženskih portreta iz različitih perioda stvaralaštva Pabla Pikasa u funkciji vremena, odnosno redosleda nastajanja portreta. Statistički značajan očekivani trend umerenog linearnog rasta dobijen je u procenama AP ( $R^2 = .566, F(3,876) = 44.2, p < .001$ ). U proceni PC ( $R^2 = .897, F(3,876) = 177, p < .001$ ) trend je takođe značajan, ali pri interpretaciji rezultata treba biti oprezan zbog malog broja stimulusa u svakom periodu. Neophodno je sprovesti detaljnije istraživanje, na većem uzorku ispitanika, ali i sa većim uzorkom stimulusa. Takođe bi bilo korisno sprovesti kvalitativnu analizu kako bi se dublje ušlo u problem estetskog iskustva i uporedili rezultati sa tvrdnjama teoretičara i istoričara umetnosti.

*Ključne reči.*: potencijal pobuđenosti, primordijalni sadržaj, ženski portreti, Pablo Pikaso

RECEIVED: 19.6.2024.

REVISION RECEIVED: 7.7.2024.

ACCEPTED: 12.7.2024.