The authors commented to peer review questions as below.

1. First of all, regarding these hypotheses, the authors wanted to evaluate the effect of painting composition on the Mona Lisa’s beauty but used only two different portrait paintings. The number of painting is too small for evaluating the effect of paintings and its composition because panels or subjects may get different idea about facial femininity, youthfulness, and attractiveness. Panels’ beauty perception and visual illusion may be different according to different clothes, background of paintings, colors and hues of the paintings, and hairstyle of persons, and so on.

   The authors’ reply: We confirm that this might be a weak point of the manuscript. We put this issue in the discussion section as a possible limitation of the study.

   My comment to authors’ reply: Thank you for your reply. I believe the authors confirmed that their study has week and critical points in the study’s hypothesis and methodology. I regard the manuscript was simply as a preliminary report needing redesigning the study methodology and hypothesis.

2. Similarly, the authors’ second hypothesis was that the Mona Lisa’s face in her portrait might appear younger, more feminine, and more attractive than her face in a male portrait, and would be more attractive than her face in a different female portrait and they want to evaluate the Mona Lisa’s ages. I regard that it is the general consensus that a perceived person’s ages, femininity, youthfulness and attractiveness in a painting are strongly influenced not only by a person’s clothes, hairstyle but colors and hues of the painting. In addition, I recognized that the facial skin colors and hues of figure 1, 3, and 5 are different. Therefore, there are too small numbers of paintings and there are too many confounding factors in the second hypothesis.

   The authors’ reply: This issue is already explained in the discussion and limitation section. “A slightly reddish skin ... is, moreover, regarded as attractive and healthy [22]. Different facial colour compositions (red/green/blue) may affect the perceived age of a person’s face [23]” and “In the Mona Lisa portrayal, red pigment (vermillion) has faded away over the centuries, and yellowish and grey colours dominate the face.” Moreover, Red-Green-Blue-balance of an image depends on the setting of the computer screen and is different for each device. We confirm that the number of the assessed images might be too small for a general statement. We add this detail in the section “limitations”. 
My comment to authors' reply: I think that those explanations about study limitations in the discussion section do not simply solve important or critical research methodological problems.

3. Besides, although authors insisted that no participant among 137 subjects recognized the Mona Lisa’s original face in portraits 1 and 3 until they saw the original Mona Lisa at the end of the survey, it is very extraordinary thing. When I showed the portrait painting of 1 or 3 to two young female students less than 15 years old, they easily recognized that the face was originated from Mona Lisa right after watching one of two paintings. Although there is no explanation about authors’ order or sequence of paintings to be shown among 4 paintings, I expect some dental students easily recognized that the face was originated from Mona Lisa right after when they see at least two paintings among 4 painting except for the original Mona Lisa. Most of all, I am afraid there are too serious problems with the study design and survey methodology. I hope the authors should get consultation with professional survey specialist or experts for proper and scientific methodology. Especially, I recommend the authors to read a similar article for understanding study design, stimuli, and phases for scientific method for such study of cognitive science or perception. (Hayn-Leichsenring GU, Kloth N, Schweinberger SR, Redies C. Adaptation effects to attractiveness of face photographs and art portraits are domain-specific. Iperception. 2013 Jun 11;4(5):303-16. doi: 10.1068/i0583. eCollection 2013.)

The authors’ reply: It is a daily routine in the scientific world that we may get results that we do not expect or do not like. We can only publish what we found. In our analysis, no one recognised Mona Lisa’s face as indicated. Sample comprised 107, not 137. “Each portrait was shown to each panellist separately in a dark silent room, beginning with the male portrait with the Mona Lisa’s face (Portrait 1) and ending with the original Mona Lisa (Portrait 5. As the author does not explain what the problem with the study design and survey methodology is, the authors cannot comment this remark.

Regarding the authors’ hypothesis and methodology, the authors had wanted to evaluate the effect of paining composition on the Mona Lisa’s beauty and examine the ages of the Mons Lisa but they used only two different portrait paintings.

The number of painting is too small for evaluating the effect of paintings’ because it is the general consensus that a perceived person’s ages, femininity, youthfulness and attractiveness in a painting are strongly influenced not only by a person’s clothes, hairstyle but colours and hues of the painting.

If you really want to predict or examine Mona Lisa’s age, please change the study design.

Please randomly show lots of faces of portrait or real faces without backgrounds or clothes (at least 50 faces or more, which means you must show statistically meaningful numbers of faces or paintings) to
4. In addition, although 107 subjects estimated the portraits’ ages as 46.05 and 18.03 for portrait 2 and 4 respectively, authors wrote that the ages of Christian IV (Portrait 2) and Marie-Suzanne Giroust-Roslin (Portrait 4) were 49 and 29 years, respectively. Therefore, especially for portrait 4, I found that 107 subjects had a tendency to evaluate younger than the actual age. Accordingly, we cannot generalize the survey results that the estimated age of the Mona Lisa’s face was 32.3 ± 5.6 years. The estimated age of the Mona Lisa’s age have to be increased as the amount as the subjects had underestimated. The authors should explain how they think about this relating problem.

The authors’ reply: The age 32.3 ± 5.6 years is a result of the statistical analysis of the questionnaires. Any influence of a tendency of the panel to under/overestimate a person’s age, as claimed by the reviewer, is hypothetic.

My comment to authors’ reply: As you are identified, all participants in this study estimated the portraits’ ages as 46.05 and 18.03 for portrait 2 and 4 respectively. However, authors wrote that the ages of Christian IV (Portrait 2) and Marie-Suzanne Giroust-Roslin (Portrait 4) were actually 49 and 29 years, respectively.

I had recommended authors to standardize the participants’ perceptual or cognitive tendency with a quantitative statistical method. It is not hypothetic but it is scientific basic methodology to standardize participation’s variables or confounding factors in statistics.

If you do not agree with my opinion, please consult with a professional statistician or survey specialists. Please give me their official answers from them about my remarks.


The authors’ reply: We accept that our statement might be one-sided. Most of the proposed literature we already know [except 4], which is an unavailable video. We have changed this predicate, and put Kramer et al in our reference list. All other authors do not fit in our topic: 2): The study focus on issues like gaze/intercanthal distance, not on the whole face. 3): This study investigates a single portrayal with altered age characteristics. What is the link to our study? Can the result of one women’s face be generalized?

My comment to authors’ reply: The recommended articles maybe useful to make a better article in the standpoint of making proper method and study designing in the subjective of similar thesis such as beauty or attractiveness, and perceptions.

**Reviewer Details:**

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