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## Does the Phineas Gage effect extend to aesthetic value?

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### ABSTRACT

In the last 20 years, a large number of studies have investigated judgments of the identity of various objects (e.g., persons, material objects, institutions) over time. One influential strand of research has found that identity judgments are shaped by normative considerations. People tend to believe that moral improvement is more compatible with the continuity of identity of a person than moral deterioration, suggesting that persons are taken to be essentially morally good. This asymmetry is often referred to as the “Phineas Gage effect”. However, normativity extends beyond morality. In particular, it is unknown whether changes in aesthetic value have a similar impact on identity judgments. We investigate whether works of art would be analogously seen as essentially aesthetically valuable. We ran four studies ( $N = 1264$ ) to explore whether aesthetic considerations have a similar influence on judgments of the identity of artworks. We presented the participants with stories describing either a painting or a musical work which undergoes changes and becomes either more or less aesthetically valuable. Overall, we found only mixed evidence for the Phineas Gage effect in relation to the aesthetic value of artworks. Other factors, such as moral value, seem to have a bigger impact on judgments of persistence.

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Experimental aesthetics; identity judgments; aesthetic value; art ontology; persistence; art and morality

## Introduction

Philosophers interested in the problem of personal identity have long discussed the conditions for a person to be one and the same (numerically identical) at two different points in time. Different factors have been suggested: psychological continuity, especially memory (Locke, 1975; Parfit, 1984), biological continuity (Olson, 1997; Shoemaker, 2019), or a mixture of psychological, biological and social (including moral) factors (Schechtman, 2014). More recently, experimental philosophers have conducted a number of empirical studies to investigate intuitions regarding personal identity,

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with a particular focus on moral qualities (see Everett , Skorborg, & Livingston, 2022; Prinz & Nichols, 2017; Strohminger & Nichols, 2014).

The story of Phineas Gage – a railroad worker who became so cruel after a dramatic accident that people who knew him said he was “no longer Gage” – has often been used in these studies. This famous case has inspired not only research in psychology and neuroscience, but also philosophers working on personal identity with an interest in the question of what makes a person “the same” over time. For example, in a vignette used in Kevin Tobia’s study on personal identity (2015), two symmetrical versions of Phineas Gage’s story were presented to two groups of participants:

Phineas is extremely kind [cruel]; he really enjoys helping [harming] people. He is also employed as a railroad worker. One day at work, a railroad explosion causes a large iron spike to fly out and into his head, and he is immediately taken for emergency surgery. The doctors manage to remove the iron spike and their patient is fortunate to survive. However, in some ways this man after the accident is remarkably different from Phineas before the accident. Phineas before the accident was extremely kind [cruel] and enjoyed helping [harming] people, but the man after the accident is now extremely cruel [kind]; he even enjoys harming [helping] people. (Tobia, 2015)

In such studies, participants are usually presented with a short story describing a disagreement between two friends on what has happened: one of them thinks that the man before the accident and the man after the accident are still the same person, while the other friend thinks that the original man does not exist anymore. When being asked to what extent they agree with each of these friends, people in the moral improvement condition tend to agree more strongly that the original Phineas and the man after the accident are the same person than the participants in the moral deterioration condition.<sup>1</sup> This asymmetry is often referred to as the “Phineas Gage effect”.<sup>2</sup>

The Phineas Gage effect has also been studied in relation with the persistence of artifacts or institutional objects. De Freitas, Tobia, Newman and Knobe’s study (De Freitas et al., 2017) confirmed that removing “good” properties of various kinds of institutional objects (countries, rock bands, science papers, and universities) is more disruptive to their identity than removing “bad” properties. De Freitas and colleagues similarly found that moral deterioration severs the identity of firms (De Freitas et al., 2022). These results suggest that previous findings – that moral traits are held to be the deepest aspect of persons – extend to judgments about other types of entities, such as group agents and institutions.

De Freitas et al. (2017) argue that such effects are driven by essence attributions: if the essence ascribed to a given entity is good, then moral improvement will be seen as more compatible with the preservation of this entity’s identity than moral deterioration; conversely, if the essence of a given entity is described as bad, then moral deterioration will be seen as

more compatible with the preservation of this entity's identity than moral improvement.

Research on psychological essentialism indeed shows that people tend to represent various sorts of terms not in their observable properties, but in terms of a deeper essence that is not observed. Psychological essentialism pertains to natural kind terms such as tiger or water, social categories such as race, gender, sexual orientation and religion, individual entities and persons (Newman & Knobe, 2019). Many studies on ordinary intuitions about personal identity suggest that people tend to believe that moral traits are the most essential part of identity. For example, in one study, participants read a story about a man who loses different parts of his mind: inability to recognize objects, loss of autobiographical memories, loss of desires, or loss of moral conscience. A person with a moral deficit is considered more significantly changed than one who loses memories, desires or perceptual capacities. When a person loses moral properties, they are no longer considered the same person (Strohming & Nichols, 2014). The belief in moral goodness being essential for personal identity is sometimes expressed in the concept of the “true self” (as opposed to the superficial or peripheral self): a belief in positive and moral character that reflects who people are “deep down” (Strohming et al., 2017; Newman et al., 2014).<sup>3</sup>

Phineas Gage-like stories can thus be taken as a valuable tool to study psychological essentialism, and to investigate the normative considerations that lie behind essence ascriptions. Normativity, however, extends far beyond morality. In particular, while extensive research over the years has been done on the interaction between identity and morality, another crucial normative dimension mentioned by Joshua Knobe in his paper “Person as Scientist, Person as Moralist” (Knobe, 2010) – aesthetic value – remains barely touched.

To date, there are only two studies related to the interaction between identity judgments and aesthetic value. First, when De Freitas et al. (2017) investigated whether the Phineas Gage effect extended to group of agents and other institutional agents such as states, they found that the asymmetry between improvement and deterioration conditions in judgments of identity was present in the case of a rock band: a band which started producing better songs was more likely to be considered as still “the same” than a band which started playing songs that were worse than before (De Freitas et al., 2017). It is not entirely clear, however, which type of value is reflected in the vignette. Before the change, “the majority of their songs were intentionally deeply moving and meaningful, while some other songs were intentionally very superficial and commercial”, while after the change, “the majority of their songs are intentionally very superficial and commercial” (De Freitas et al., 2017). What seems to be targeted here is the band's *authenticity*, which can be taken to reflect both moral and aesthetic qualities: creating superficial

and commercial content might as well be seen as a *moral* decision. Therefore, it is not entirely clear if it is an aesthetic change or a moral change that had an effect on band identity judgments.

The second study, interestingly, shows that aesthetic preferences are considered an important part of *personal* identity. Fingerhut et al. (2021) have found that changes in aesthetic taste have a profound effect on judgments of personal identity, and the effect appears to be as strong as the impact of moral changes. However, finding an effect of a change in aesthetic taste does not amount to finding an effect of a change in aesthetic value: whereas the results of this study show that people's aesthetic preferences are important for judgments of identity, it is unclear whether changes in the aesthetic value of an entity – for example an artwork – would have an impact when assessing whether such entity persists or not after the change.

In short, to date, there is no research on whether aesthetic value is seen as an essential property of any kind of entities. Artworks would appear to be a natural candidate here: if any objects are essentialized in terms of their aesthetic value, it must surely be works of art.

The goal of the present paper is thus to investigate whether the Phineas Gage effect extends to the aesthetic value of artworks, in order to assess the extent to which aesthetic values are taken to be essential to artworks. While humans are considered by the folk to be essentially morally good, works of art might be analogously seen as essentially aesthetically valuable. Of course, the idea that persistence judgments of entities such as artworks might depend on aesthetic value is not new in philosophy. For example, some authors argue that the identity conditions of musical works are dependent on their aesthetic qualities (Ridley, 2003), or even that ontological judgments are a type of aesthetic evaluation (Neufeld, 2014), but these claims remain empirically untested. The studies reported here were thus precisely designed to test whether changes in aesthetic value would be seen as more compatible with the continuity of identity when an artwork aesthetically improves, and, conversely, that they would tend to be seen as disrupting such identity when an artwork aesthetically deteriorates.

## Study 1

### Participants

360 French-speaking participants (age  $M = 25.02$ ; women: 240; men: 94; other or did not wish to report: 26) were recruited for this first study through the INSEAD-Sorbonne Université Behavioural Lab. 116 participants were excluded for failing the attention check<sup>4</sup> or the control questions, leaving us with 244 participants (age  $M = 24.84$ ; women: 173; men: 67; other

or did not wish to report: 4). Once the study had concluded, 15 randomly selected participants received 20 euros each.

### **Procedure and materials**

The study – as well as all the other studies reported in this paper – was conducted online using Qualtrics. Each participant was presented, in a random order, with two vignettes (one about a painting, the other about a musical work) in which an artwork underwent a change (introduced either by the artwork's creator or through an event independent of creative intention) that resulted in a modification in the artwork's aesthetic value (either in a positive or negative direction).

It was important to us to consider more than one artistic domain in this first study. Musical works and paintings, for example, are seen in the ontological literature as exhibiting different ontological behaviors. Paintings are standardly seen as concrete material objects while musical works are more often than not considered to be abstract. According to Nelson Goodman's (1968) famous distinction, musical works are *allo-graphic* artworks – that is, artworks which do not allow for forgery, as opposed to *autographic* works where the distinction between original and forgery is significant. Musical works are thus seen as essentially repeatable, multiply instantiable, like other works for performance. That being said, both types of artworks can equally be seen as exhibiting some degree of temporal flexibility – undergoing some changes (such as revisions that are made well after that the work has been first shown to the public) while still being considered the same artwork (Rohrbaugh, 2003).

It seemed equally important to control for the source of the change made to the artwork. For example, Friedell (2020) hypothesizes that our social practices allow musical works to be changed only by their original creators. If this is correct, participants may treat continuity of the creator's intentions as a necessary condition for work identity. In that case, they will see changes to the artwork introduced by others as more destructive to work's identity. Similarly, Newman, Bartels and Smith found that artworks made by the original artist were more likely to be considered numerically identical with the original artwork compared to those made by another author (Newman et al., 2014), while the results of Mikalonytė and Dranseika's study (Mikalonytė & Dranseika, 2022) showed changes made by the original author were seen as more preserving the identity of a musical work than those made by other persons.

The study followed a  $2 \times 2 \times 2$  mixed factorial design, with Art Form (either Painting or Music) as a within-participant factor and Direction of Change (either Positive or Negative) and Source of Change (either Author or External) as between-participants factors.

The two vignettes used in this study were the following:

### *Painting*

**[Intro]** Imagine that a contemporary painter creates a new painting, “Echo”. The painting is regularly shown to the public during exhibitions, and thus becomes quite well known, especially for its very particular colors.

**[Source of change: External]** Some time after the death of the painter, a gas leak occurs in the room of the museum where the painting hangs. The gas leak causes a chemical reaction that completely changes the colors of the painting.

**[Source of change: Author]** One night, the painter enters the room of the museum where the painting hangs and completely changes the colors of his painting. But on leaving the museum, he suddenly dies of a heart attack.

Next day, the director of the museum finds out what happened and decides to leave the painting on display. Everyone agrees that the picture is

**[Direction of change: Positive]** much more beautiful after the gas leak/the painter’s changes.

**[Direction of change: Negative]** much less beautiful after the gas leak/the painter’s changes.

Each time the painting is exhibited in a museum, it is a public

**[Direction of change: Positive]** success.

**[Direction of change: Negative]** failure.

**[Outro]** One evening two art lovers meet to discuss the painting. Sacha thinks that the original painting, “Echo”, does not exist anymore. Sacha thinks that it’s not “Echo” anymore which is exhibited in the museums, but another painting. Alex thinks that the original painting, “Echo”, still exists. Alex thinks that, although the painting has changed, it is still “Echo” that is exhibited in the museums. Who do you agree with more, Sacha or Alex?

### *Musical work*

**[Intro]** Imagine that a contemporary musician composes a new piece, “Explosion”, for a brand new electronic instrument. The instrument is inspired by the violin, but has a very different sound. The piece is regularly performed at concerts, and thus becomes quite well known, especially for its very particular sound. However, a few years after the composer’s death,

**[Source of change: External]** the company that made this new instrument goes bankrupt and stops making them. It becomes impossible to find an instrument in good condition to play the composer’s piece. A violinist then has the idea of playing

the piece on the violin. Other violinists start imitating her and begin to play the composer's piece only on the violin during their concerts.

**[Source of change: Author]** we discover that the composer left a will in which he asked that his piece would be played on the violin, and prohibited the playing of the piece with the electronic instrument. A large number of violinists begin to play the composer's piece in their concerts and from that moment, the piece is only played on the violin.

The sound of the piece is thus completely changed. Everyone agrees that the piece played on the violin after the end of *the production of the electronic instrument* [the discovery of the composer's will] is *much more* [much less] beautiful. Each time the piece is performed in a concert hall, it is a public success [failure].

**[Outro]** One evening two art lovers meet to discuss the musical work. Sacha thinks that the original work, "Explosion", does not exist anymore. Sacha thinks that it's not "Explosion" anymore which is played in concert halls, but another musical work. Alex thinks that the original musical work, "Explosion", still exists. Alex thinks that, although the musical work has changed, it is still "Explosion" that is played in concert halls. Who do you agree with more, Sacha or Alex?

As illustrated above, each vignette in all studies reported in this paper concluded with a discussion between two characters, one (Alex) defending the position that it was still the same artwork after the change, the other (Sacha) supporting the idea that it was no longer the same artwork. The participants were asked to rate on the following 7-point Likert scale with whom they agreed more:

- (1) I completely agree with Alex and not at all with Sacha;
- (2) I agree much more with Alex than with Sacha;
- (3) I agree slightly more with Alex than with Sacha;
- (4) I agree equally with Alex and with Sacha;
- (5) I agree slightly more with Sacha than with Alex;
- (6) I agree much more with Sacha than with Alex;
- (7) I completely agree with Sacha and not at all with Alex.

The order of presentation of Alex and Sacha's positions was counterbalanced between participants.

## Results

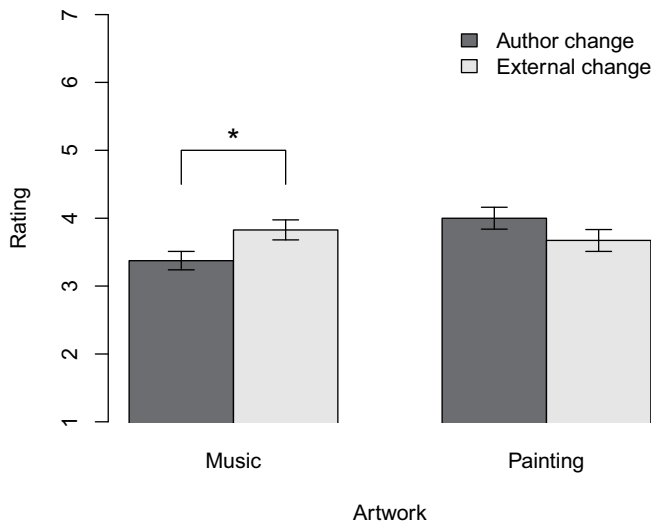
The impact of the three experimental factors (Art Form; Source of Change; Direction of Change) on participants' ratings were analyzed through a 3-way ANOVA, using the EZ package in R. Our statistical analysis revealed an absence of main effect of Art Form ( $F = 3.010$ ,  $p = 0.084$ ), an absence of main effect of Source ( $F = 0.144$ ,  $p = 0.705$ ), and an absence of



main effect of Direction ( $F < 0.000$ ,  $p = 0.980$ ). The only significant result was the interaction between Art Form and Source of Change ( $F = 6.929$ ,  $p = 0.009$ ,  $\eta^2 = 0.013$ ). We thus ran two post-hoc t-tests (corrected for multiple comparisons) which revealed that, in the case of music, participants were more likely to think that the original work had been replaced by a new one when the change was the result of an external event, such as the impossibility to find the prescribed instrument ( $M = 3.83$ ,  $SD = 1.58$ ), than when the change was the result of a decision made by the artwork's creator ( $M = 3.38$ ,  $SD = 1.54$ ) ( $t = 2.261$ ,  $p = 0.049$ , Cohen's  $d = 0.290$ ) (see [Figure 1](#)). However, no such difference due to intentionality was observed in Painting vignette ( $t = -1.440$ ,  $p = 0.151$ ).

## Discussion

The results provide some support for the view that people tend to consider musical works as being ontologically tied to the identity of their composers (Levinson, 1980; Mikalonytė & Dranseika, 2020): it made a difference in how our participants thought about the persistence of the musical work under discussion whether the very same change in instrumentation (from an electronic instrument to a violin) was intended by its composer or was the result of an extrinsic event, independent of the composer's intentions. Symmetrically, such result is compatible with David Friedel's (Friedell, 2020) view according to which, in our current social practices, changes made to a given musical work by people other than its creator are more



**Figure 1.** Results from study 1. Error bars show standard error, and the black asterisk shows a significant difference between author change and External change in the case of musical works ( $p < 0.05$ ).

likely to be considered as resulting in a new work than as preserving the work's identity. They also resonate with empirical research on intuitions about visual artworks and the hypothesis that artworks are considered as the extensions of their creators (Newman & Smith, 2018).

However, for the issue at hand, a striking result of this study is that we did not find any evidence for the Phineas Gage effect on the aesthetic value of artworks: participants were equally inclined to judge that an artwork remained the same (or that it turned out to no longer be the same) after it underwent a given change, *whether or not the artwork's aesthetic value improved or deteriorated*. Whether the artwork considered was a painting or a musical work, or whether the change was made by the artwork's author or was the result of an external event had no influence on the matter whatsoever.

That being said, the absence of Phineas Gage effect on the aesthetic value of artworks might also have been a consequence of our experimental design. First, our vignettes might have been unnecessarily complicated with too many details provided, and involving complex chains of events and decisions, which might have led the participants to simply not pay enough attention to what was the crucial part of the story – namely, the impact of the change on the artwork's aesthetic value. This contrasts with Tobia's study on the Phineas Gage effect (Tobia, 2015), in which the impact of the accident on the personality of Phineas Gage clearly played a central role in the vignette provided to the participants.

Second, it is possible that the lack of effect had something to do with the reliability of aesthetic testimony. In the debriefing section of our study, many participants commented that they would like to see or hear the work and evaluate the aesthetic change by themselves before answering the questions. Some of them explicitly commented that "beauty is subjective", feeling that they could not trust what others are saying. This might be an important difference between moral and aesthetic value: it is arguably easier to rely on testimony about moral qualities compared to testimony about aesthetic qualities. James Andow (2018) ran a study to empirically test the hypothesis that people are content to trust testimony about the formal or descriptive properties of artworks, but they are more cautious when it comes to basing beliefs about aesthetic properties. His results were that forming an opinion based on testimony is considered to be less permissible/legitimate in aesthetic cases – such as judgments on beauty and ugliness – compared to nonaesthetic cases, such as size and cost. Therefore, it seems that people might just not be particularly inclined to form aesthetic beliefs based merely on aesthetic testimony.

A third issue with this study was that it did not allow us to test whether the lack of a Phineas Gage effect on the aesthetic value of artwork was due to the switch from moral values toward aesthetical values or to the switch from humans toward artworks. Indeed, it could just be that artworks are not sensitive to the effect at all, whether it pertains to ethical aspects or to aesthetic aspects. Contrasting those two aspects within the same design would have better distinguished how judgments of value and judgments of identity interact in the case of artworks.

In order to address those various methodological concerns, we decided to run two follow-up studies.

## Study 2

The second study was meant to test whether the absence of the Phineas Gage effect found in the previous study was due to the fact that participants did not have any perceptual access to the artworks.

### Participants

603 French-speaking participants (age  $M = 24.47$ ; women: 460; men: 99; other or did not wish to report: 44) were recruited for the second study through the INSEAD-Sorbonne Université Behavioural Lab. Participants from the previous study could not enroll for this study. 185 participants were excluded for failing the attention check or the control questions, leaving us with 418 participants (age  $M = 24.44$ ; women: 338; men: 65; other or did not wish to report: 15).

Once the study had concluded, 20 randomly selected participants received 20 euros each.

### Procedure and materials

For the second study, we adapted the “Music” vignette used in the previous experiment. As the story was about a piece written for a new electronic instrument, we had to find a musical example that would roughly fit such description in order to assess whether perceptual access to the artwork under discussion made any difference for the participants. We selected a 20-second excerpt of Olivier Messiaen’s *Fête des Belles Eaux*, composed in 1937 for six ondes Martenot. We also created a spectrally-deteriorated version of the excerpt by passing the excerpt through a phase vocoder. The excerpt was converted from stereo to mono. The resulting signal was passed through a vocoder implemented with 16 frequency bands log-spaced between 100 Hz and 8000 Hz. It applied the extracted modulation envelopes to noise carriers

that were finally filtered in each corresponding frequency band and added together (for details, see Gaudrain & Başkent, 2015). Crucially, this manipulation preserved the overall temporal organization and gestalt of the excerpt while drastically altering its musical, harmonic content – making it much noisier, and, arguably, less aesthetically valuable.<sup>5</sup>

The study then followed a 2 × 2 between-participants factorial design, with Direction of Change (either Positive or Negative) and Mode of presentation (either Testimony or Sound) as our two factors of interest. Importantly, in the Sound condition, there was no description of a change in aesthetic value. Instead, participants could listen to how the piece introduced in the vignette sounded originally, and how it sounded after it underwent the change described in the vignette. When the Direction of Change was Positive, participants were presented with the acoustically modified version of Messiaen’s piece first, and then with the original version. Conversely, when the Direction of Change was Negative, participants were presented with the Messiaen’s original version first, and then with the modified version.

The vignettes used in this second study were the following:

### **Mode of presentation: testimony**

Some years ago, a musician composed a new piece, “Explosion”, for a brand new electronic instrument. The piece was regularly performed at concerts, and thus became quite well known, especially for its very particular sound. A few years after the composer’s death, all copies of this new electronic instrument are broken down. It becomes impossible to find an instrument in good condition to play the composer’s piece. The company which used to make this instrument decides to produce a new model, which has a completely different sound. This new model is now being used each time the musical piece is played. Everyone agrees that the piece after the disappearance of the first model of the instrument is much *more beautiful* [less beautiful]. Each time the piece is performed in a concert hall, it is a public *success* [failure].

One evening two music lovers meet to discuss the musical work. Sacha thinks that the original work, “Explosion”, does not exist anymore after the disappearance of the first model of the instrument, and that it is another work that is now being played in concert halls. Alex thinks that although the piece has changed after the disappearance of the first model of instrument, it is still “Explosion” that is played in concert halls. Who do you agree with more, Sacha or Alex?

### **Mode of presentation: sound**

Some years ago, a musician composed a new piece, “Explosion”, for a brand new electronic instrument. The piece was regularly performed at concerts, and thus

became quite well known, especially for its very particular sound. Here is an excerpt (please click on “Play” to listen to the excerpt): [*the modified version of the stimulus*]/ ([the original version of the stimulus]). A few years after the composer’s death, all copies of this new electronic instrument are broken down. It becomes impossible to find an instrument in good condition to play the composer’s piece. The company which used to make this instrument decides to produce a new model, which has a completely different sound. This new model is now being used each time the musical piece is played. Here is an excerpt of the way in which the piece sounds now (please click on “Play” to listen to the excerpt): [*the original version of the stimulus*]/ ([the modified version of the stimulus]).

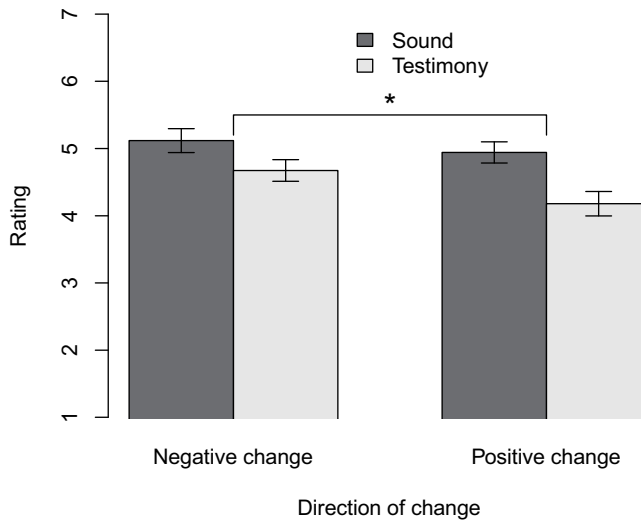
One evening two music lovers meet to discuss the musical work. Sacha thinks that the original work, “Explosion”, does not exist anymore after the disappearance of the first model of the instrument, and that it is another work that is now being played in concert halls. Alex thinks that although the piece has changed after the disappearance of the first model of instrument, it is still “Explosion” that is played in concert halls. Who do you agree with more, Sacha or Alex?

## Results

The impact of our two experimental factors (Mode of Presentation; Direction of Change) on participants’ ratings was analyzed through a 2-way ANOVA, using the EZ package in R. We found a main effect of Mode of Presentation ( $F = 12.632, p < 0.001, \eta^2 = 0.030$ ) – such that participants were more likely to think that the artwork was no longer the same after the change when they could listen to how the artwork sounded before and after the change ( $M = 5.03, SD = 1.70$ ), as compared to when they could only rely on a textual description ( $M = 4.43, SD = 1.79$ ) – and a main effect of Direction of change ( $F = 3.886, p = 0.049, \eta^2 = 0.010$ ) – such that participants were more likely to think that the artwork was still the same after the change if it had aesthetically improved ( $M = 4.56, SD = 1.78$ ), as compared to when the artwork aesthetically deteriorated ( $M = 4.89, SD = 1.74$ ). No significant interaction between Mode of Presentation and Direction of Change was found ( $F = 0.875, p = 0.350$ ).

## Discussion

Contrary to the results of our first study, the second study did provide some evidence for the existence of a Phineas Gage effect in the context of the aesthetic value of artworks. Importantly, while we did not find a statistically significant interaction between the two factors of interest, the effect of the Direction of Change on participants’ ratings did not seem to be driven by the fact that some participants had a perceptual access to the artwork under discussion. If anything, our results rather exhibit the opposite trend –



**Figure 2.** Results from study 2. Error bars show standard error, and the black asterisk shows a significant difference between Negative change and Positive change ( $p < 0.05$ ).

namely, that the effect seems to have been mainly due to what happened when participants only had access to a textual description (see Figure 2).

Another potential explanation for the presence of the Phineas Gage effect in this study would be that it simply had more participants, and, thus, more statistical power. While it remains a possibility, our first study did not exhibit the slightest trend in that direction (see the test values reported above). Therefore, the more likely explanation is that the changes made in the vignette itself in terms of clarity and concision were enough to make a difference in the participants' judgments.

In the same vein, this study also showed that participants' intuitions were strongly influenced by the perceptual access to the artwork. The tendency to rely on purely textual vignettes to assess intuitions on music ontology might thus also need to be reevaluated. We come back to these methodological issues in the general discussion.

### Study 3

The third study was meant to contrast the Phineas Gage effect for both the aesthetic and moral value of artworks.

### Participants

Participants were the same as in Study 2. The order through which they participated in Study 2 and Study 3 was randomized.

## Materials

Each participant was randomly presented with a vignette in which a painting underwent a change that resulted either in a change in the artwork's aesthetic value (either positive or negative) or in a change in the artwork's moral value (either positive or negative). The study thus followed a  $2 \times 2$  between-participants factorial design, with Direction of Change (either Positive or Negative) and Type of Value (either Moral or Aesthetic) as our two factors of interest.

**[Intro]** Echo is a painting made by an artist a few years ago. The painting consists of a large number of characters. The majority of these characters are painted with acrylics,

**[Positive aesthetic change]** in a very banal manner, which leaves people completely indifferent.

**[Positive moral change]** in a racist and offensive manner.

**[Negative aesthetic change]** in a very original manner, which moves people a lot.

**[Negative moral change]** in a respectful and benevolent manner.

But some characters, on the contrary, are painted with oil,

**[Positive aesthetic change]** in a very original manner, which moves people a lot.

**[Positive moral change]** in a respectful and benevolent manner.

**[Negative aesthetic change]** in a very banal manner, which leaves people completely indifferent.

**[Negative moral change]** in a racist and offensive manner.

One night, a gas leak occurs in the room of the museum where the painting hangs. The gas leak causes a chemical reaction that completely destroys the part of the painting made with acrylics. Now, the painting only contains the characters painted with oil,

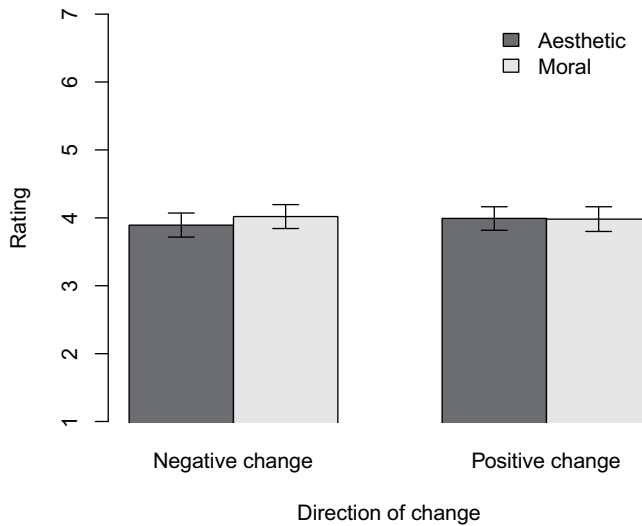
**[Positive aesthetic change]** in a very original manner, which moves people a lot.

**[Positive moral change]** in a respectful and benevolent manner.

**[Negative aesthetic change]** in a very banal manner, which leaves people completely indifferent.

**[Negative moral change]** in a racist and offensive manner.

**[Outro]** One evening two art lovers meet to discuss the painting. Sacha thinks that "Echo" does not exist anymore after the gas leak, and that it is now another painting that is exhibited in the museum. Alex thinks that although the painting has changed after the gas leak, it is still "Echo" that is exhibited in the museums. Who do you agree with more, Sacha or Alex?



**Figure 3.** Results from study 3. Error bars show standard error.

### Results

The impact of our two experimental factors (Type of Value; Direction of Change) on participants' ratings was analyzed through a 2-way ANOVA, using the EZ package in R. Our statistical analysis revealed an absence of main effect of Type of Value ( $F = 0.106$ ,  $p = 0.745$ ) and an absence of main effect of Direction of Change ( $F = 0.028$ ,  $p = 0.868$ ) (see [Figure 3](#)). In other words, similar to Study 1 but contrary to Study 2, we did not find evidence in favor of the Phineas Gage effect. The effect did not even appear when the story was about a change in the painting's moral implications, which is highly surprising, given how often the effect has been replicated in previous studies.

### Discussion

Such results could be explained in two ways: either there is something specific in paintings (in contrast to musical works) which explains why they are not susceptible to the Phineas Gage effect; or, there was something in the way we framed our vignette that simply prevented the effect from arising. Regarding the latter possibility, it should be noted that all the previous studies on the Phineas Gage effect involved human behaviors – either because the story presented to participants described an unintentional change in a given individual's behavior (in the original Phineas Gage story) or because it described a change in a group of agents (e.g., a rock band) or in an artifact (e.g., a scientific paper) that happens as the result of (a series of) human decisions. In other words, it might



just be that the Phineas Gage effect only extends to artifacts when they can be taken to reflect a change in the moral behavior of their creators. The results from our second study are also consistent with this possibility, even if they only pertain to the impact of the Phineas Gage effect on aesthetic value: the vignette involved an instrument maker who intentionally decided to produce a new instrument, ultimately resulting in a change in the aesthetic value of the musical work that relied on this new instrument. Conversely, in the present study, the changes were not caused by human decisions.

Another potential issue with our vignette was that it presented a story in which most of the painting was destroyed, leaving only certain parts of the painting intact. Intuitions about whether such a drastic change in the material integrity of the painting was compatible with the painting remaining the same or not may thus have played a central role, to the point of overriding the Phineas Gage effect. As we know from previous studies (Newman & Bloom, 2012), material identity is a crucial factor in judgments of the identity of paintings, therefore it is not surprising that significant changes in material composition might not leave enough room for aesthetic considerations.

We decided to conduct a final study to contrast once again the Phineas Gage effect for both the aesthetic value and the moral value of artworks, this time using a vignette which would not be susceptible to these two potential issues.

## **Study 4**

### ***Participants***

301 French-speaking participants (age  $M = 25.83$ ; women: 225; men: 58; other or did not wish to report: 16) were recruited through the INSEAD-Sorbonne Université Behavioural Lab. Participants from the previous studies could not enroll. 58 participants were excluded for failing the attention check or the control questions, leaving us with 243 participants (age  $M = 25.75$ ; women: 188; men: 47; other or did not wish to report: 8). 10 randomly selected participants received 20 euros each.

### ***Procedure and materials***

Each participant was randomly presented with a vignette in which a song underwent a change that resulted either in a modification of the artwork's aesthetic value (either positive or negative) or in a modification of the artwork's moral value (either positive or negative). The study thus followed a  $2 \times 2$  between-participants factorial design, with Direction of Change

(either Positive or Negative) and Type of Value (either Moral or Aesthetic) as our two factors of interest.

Crucially, the vignettes used in the fourth study differed from the vignettes in the third study in that, first, the change introduced in the song was described as result of the songwriter's decision, and second, the change preserved the structural integrity of the artwork for at least one of its components (i.e., the musical component).

Imagine a musician releasing a new song, "Yellow Shores", on digital platforms. However, some time later, the musician decides to bring some changes to the lyrics of "Yellow Shores". He makes a new recording of his song, and replaces the old version of the song with the new version in all digital platforms, so that it becomes simply impossible to listen to the old version. Everybody agrees that the song now is much *more beautiful* [less beautiful]/ *more benevolent* [more hateful]. It is often described over social media as *one of the most successful* [failed] *songs of this musician/as particularly unifying* [discriminatory] *song*.

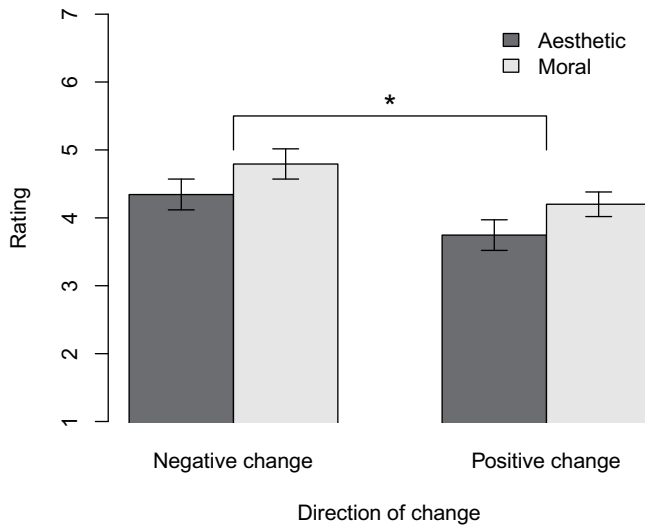
One evening two music lovers meet to discuss the song. Sacha thinks that "Yellow Shores" does not exist anymore since the musician wrote new lyrics, and that it is now another song that is being played on digital platforms. Alex thinks that, although the song has changed after the musician wrote new words, it is still "Yellow Shores" that is being played on digital platforms. Who do you agree with more, Sacha or Alex?

## Results

The impact of two experimental factors (Type of Value; Direction of Change) on participants' ratings was analyzed through a 2-way ANOVA, using the EZ package in R. Statistical analysis revealed a main effect of Type of Value ( $F = 4.471$ ,  $p = 0.036$ ,  $\eta^2 = 0.018$ ) – such that participants were more likely to think that the artwork was no longer the same after the change when the change had an impact on the artwork's moral value ( $M = 4.48$ ,  $SD = 1.60$ ) as compared to the aesthetic value ( $M = 4.05$ ,  $SD = 1.77$ ) – and a main effect of Direction of Change ( $F = 7.784$ ,  $p = 0.006$ ,  $\eta^2 = 0.031$ ) – such that participants were more likely to think that the artwork was still the same after the change when the change had a positive impact on the artwork's value ( $M = 3.98$ ,  $SD = 1.60$ ), as compared to when it had a negative impact ( $M = 4.56$ ,  $SD = 1.74$ ). No significant interaction between Type of Value and Direction of Change was found ( $F < 0.000$ ,  $p = 0.990$ ).

## Discussion

Contrary to the previous study, this study replicated the results from the second study: once again, we found evidence in favor of the existence of the Phineas Gage effect on artworks. It is thus likely that the introduction



**Figure 4.** Results from study 4. Error bars show standard error, and the black asterisk shows a significant difference between Negative change and Positive change ( $p < 0.05$ ).

of an intentional decision in the story (the songwriter explicitly decides to change the lyrics of the song), or the fact that the change described in the story did not completely alter the structural integrity of the artwork, indeed made a crucial difference in participants' sensitivity to the Phineas Gage effect.

Interestingly, no significant interaction was found between Type of Value and Direction of Change: on the contrary, the result pattern was strikingly similar for both types of values (see Figure 4). In other words, the Phineas Gage effect in artworks did not seem to be specifically driven by the judgments made on stories involving moral considerations. The study also shows that the well-established effects of moral value on judgments of identity also extend to artifacts such as artworks.

It is already well-known that moral considerations are not irrelevant to the way we engage with artworks, either because artworks can more or less explicitly display moral values as part of their content (Levinson, 1980) or because we tend to see artworks as being “contaminated” by the moral essence ascribed to their creators (Stavrova et al., 2016). Some philosophers have also argued that the aesthetic value and the ethical value of an artwork can interact (Carroll, 1996; Stecker, 2005). Our results go one step further, though, by showing that moral considerations seem to play a stronger role than aesthetic aspects when it comes to assessing the identity of an artwork: in this case, changes in the moral value of an artwork were seen as more disruptive than changes in its aesthetic value. If persistence judgments are indeed a good tool to reveal beliefs on essence, this would mean that moral properties are more essential to artworks than aesthetic properties. Such

result may seem surprising, given how strongly we tend to associate artworks with the realm of aesthetic value. We should however be careful to not jump to conclusions based on this sole experiment: it could be the case that this result does not extend beyond the specific case of songs – which can offer varied moral perspectives through their lyrics (see, for instance, Levinson, 2012), and are often seen as a direct emanation of the persona of their singers in such a way that they might be particularly prone to any contagion effect (Bicknell, 2015).

Participants may have also been particularly sensitive to changes in moral value because the story was specifically about the song's lyrics, rather than its musical accompaniment. One previous study has found that melodies of songs were more important than their lyrics in eliciting emotions (Ali & Peynircioğlu, 2006). In other words, it could be that songs' core aesthetic properties (such as beauty or expressivity) are implicitly more strongly associated to their musical components than to their lyrics, which, in turn, are more closely associated with ethical aspects. If it is the case, the beauty of the song described in the vignettes might have been interpreted as *moral*, rather than aesthetic beauty (see Doran, *in press*).

### **General discussion**

Our four studies offer a complex and nuanced picture of the Phineas Gage effect in relation to the aesthetic value of artworks. On the one hand, while the Phineas Gage effect was found for both aesthetic and moral values in Study 4, changes in aesthetic value of artworks still had a lesser impact on the participants' identity judgments than changes in moral value. Moreover, we did not find the Phineas Gage effect in Study 3, in which the artwork described underwent an extreme disruption of physical continuity. This suggests that both considerations about moral value and those about material continuity might play a more important role in folk judgments of persistence than information about a work's aesthetic value. On the other hand, the results from Studies 2 and 4 provide some support for the Phineas Gage effect extending to the aesthetic value of artworks: in both cases, aesthetic improvement was seen as more compatible with the preservation of the artwork's identity than aesthetic deterioration.

Overall, the results are compatible with two possible interpretations. First, it might be that artworks are not essentialized in terms of their aesthetic properties. While aesthetic properties are fairly important, they do not seem to be considered essential: both material continuity and moral value seem to play a more important role. This interpretation would be consistent with results from studies on the folk concept of art: while the classical definitions of art happen to emphasize the function of providing people with aesthetic experiences, some empirical studies have shown that,

to the contrary, although beauty is an important factor in judgments on what is art, in some cases people are inclined to consider art objects that are not aesthetically valuable (Kamber, 2011; Kamber & Enoch, 2018; Mikalonyté & Kneer, 2023).

Our results, especially those of the third study, suggest that material identity might be an important factor for judgments of the persistence of visual artworks. These results are coherent with those of Newman et al. (2014), who claim that people think about artworks in materialistic terms. Newman et al. (2014) investigated how people determine the continuity over time of artifacts and artworks in particular. They claim that overall, people do not think about the persistence of *artifacts* in materialistic terms, but artworks must be different from other artifacts as society does not value copies as much as the original artworks (see Newman & Bloom, 2012). Newman et al. (2014) used scenarios presenting a story about an identical copy being made of either an artwork or a tool, and the original being destroyed. The results show that merely categorizing an object as an artwork (as opposed to a tool) makes an exact copy of it less likely to be seen as “the same”. Moreover, it seems that the physical contact with the artist plays an important part in persistence judgments. The authors claim that judgments on artworks’ persistence more closely resemble those about persons than those about other types of artifacts (Newman et al., 2014). Rabb et al. (2018) also suggest that artworks are essentialized: duplicates of paintings and photographs are held to be aesthetically worse than the originals, even if their appearance is identical. All these studies suggest that material identity might be a crucial factor for artworks such as paintings or sculptures.

The fact that we found the Phineas Gage effect only in musical cases might be partially explained by the difference between visual and aural works of art. Research shows that judgments about artworks are affected by the belief in contagion with the creator’s essence (Newman & Bloom, 2012; Stavrova et al., 2016). While painters usually have a physical contact with their paintings’ canvas, composers, at least in classical music, have no direct physical relationship with the sound events produced when their works are performed. Moreover, musical performance is often not a result of one individual creator’s intentions, but rather a collective creation of creator(s) and performer(s). Therefore, because of a smaller impact of intuitions regarding material continuity between artworks and their creators, aesthetic considerations might play a more significant role in judgments of the identity of *musical works* compared to paintings.

However, the mixed pattern of results might also be interpreted in a different way, highlighting the role played by intentionality. In the two studies in which the Phineas Gage effect appeared, intentionality played a key role: the aesthetic value of the artwork was modified as a result of an

intentional decision, either from the creator or from an instrument maker. Conversely, there was no intentional decision involved in the changes described in Study 3. Therefore, it remains a possibility that the effect that seemed to appear in Studies 2 and 4 was not really about the aesthetic value of the artworks themselves but rather about the agents' underlying decisions.

The results of our four studies also invite methodological reflection. Firstly, it has been argued that what all the results in the field of experimental philosophy of personal identity show is a matter of similarity rather than of numerical identity (Finlay & Starman, 2022). It is notoriously difficult to come up with a good method to capture participants' intuitions on numerical identity. The reason why it is so important to carefully phrase the questions about identity is that *the same* can mean both qualitative and quantitative identity (Dranseika, 2017).

In order to make the distinction clear, researchers often introduce a complex philosophical debate that might not always be completely comprehensible to study participants. For instance, the formulation used by Tobia (2015) has been criticized for relying on participants' understanding of a long text presenting subtle philosophical discussion (Finlay & Starman, 2022). Finlay and Starman (2022) suggest that participants should be specifically trained to understand the difference between numerical and qualitative identity before embarking into such studies. Although we did not train our participants to understand the debate under consideration, we tried to frame the discussion between Alex and Sacha in a way that made clear that the debate was on numerical identity: in all our vignettes, Sacha indeed believed that the original artwork "did not exist anymore", and had been replaced by a new one, while Alex believed that "although it has changed, this is still the same artwork that is being shown/performed".

Secondly, Starman and Bloom, who also have doubts that studies in the field indeed capture what they are supposed to capture, have suggested that philosophers should also reflect on the legal aspect of personal identity problem:

[...] legal identity is at least partially based on intuitions about personal identity. As a science fiction example, imagine that Bob dies and his body is donated to science. Fred, sound of mind but poor of body, has his brain transplanted into Bob's body. In this case we would certainly assign the person who looks like Bob – the body that used to be Bob's – a new name and a new legal identity. Why then do we not do this when a person becomes immoral? We believe, in this type of case, that nobody thinks there is a numerically different person. Instead, the perception is that there is one person who has changed dramatically. (Starman & Bloom, 2018)

Thus, another possible approach would be to formulate scenarios in a way which reflects legal considerations regarding works of art. For example, when a change to the artwork is introduced by another person, and the

work after the change is either aesthetically more or less valuable, study participants may be asked about the credit each author deserves, and possibly which of the two authors should receive royalties when the work after the change is being displayed or performed.

Thirdly, from the methodological point of view, the results of the second study invite us to pay more attention to the tendency in experimental philosophy of music to rely on purely textual descriptions (Puy, 2022). They once again show that supplementing textual vignettes with musical stimuli has an effect on the participants' responses. On the one hand, in order to stay closer to actual aesthetic experiences, it might be important to include visual/acoustic stimuli. On the other hand, textual descriptions might help to reliably emphasize the relevant factors.

Fourthly, in more recent studies on the Phineas Gage effect (see De Freitas et al., 2017), the change in an entity's moral value is not explicitly stated as such but rather typically operationalized through the more detailed description of a change in behavior: for example, instead of just saying that a local government's moral values deteriorate, one says that the local government who used to teach people to express their opinions freely now teaches them to discriminate against one another. Such descriptions are meant to provide participants with a more vivid representation, making it easier for them to trust that a drastic change in the entity's moral value actually happened in the fictional world depicted by the vignette. However, it is quite difficult, if not impossible, to find similarly detailed descriptions of a change in the structural features of a given artwork that would be clearly and non-controversially associated with a deterioration or improvement in aesthetic value. Our strategy was to rely not on a description of what the artwork looks like or sounds like after the change, but rather on the description of a consensus in how the artwork is perceived and received within the artworld, hoping that this would similarly make it easier for our participants to trust that a drastic change in the artwork's aesthetic value had actually happened (in the fictional world). However, such methodological choice might make study participants more inclined to think about aesthetic value in subjectivist terms, and to consider aesthetic judgment as a subjective judgment, more related to subjective feelings of liking rather than to the beauty of an artwork under discussion. It remains an open question whether a more objectivist description of an aesthetic change is possible.

It is also important to reflect these results in the context of artwork – and, more generally, artifact – essentialism. The results of our Study 3 are in line with Newman and Bartel's (2012) results: it seems that material continuity plays a crucial role in folk judgments of the identity of artworks. The effect of the change in aesthetic value seems to be easily concealed or overturned if there are other changes happening to the artwork. However, our studies do

provide tentative evidence that people think about what artworks are in terms of their aesthetic properties. In that sense, our results are in line with a tradition of studies showing that moral judgments impact people's use of various seemingly non-moral concepts, such as intentionality (Knobe, 2003), causation (Hitchcock & Knobe, 2009), happiness (Phillips et al., 2017), freedom (Phillips & Knobe, 2009), or the distinction between doing and allowing (Cushman et al., 2008). Our results show that moral considerations can also be relevant to folk judgments of *artwork* identity, but they also show that the *aesthetic value* should be added to the list of normative factors that may influence various non-normative judgments, at least in some cases. This, however, needs to be examined further in future research. Future experiments should explore more thoroughly the complex relationship between the ontology of artworks and the various kinds of values it embeds. It would also be valuable to precisely measure the extent to which moral considerations could override aesthetic considerations, and to explore a wider variety of adjectives to describe moral and aesthetic changes – the descriptions we used in this study might have been not always precisely symmetrical between the two conditions (e.g., in Study 4), as finding adjective pairs that describe moral and aesthetic changes of equal strength remains a challenge. Finally, although we chose to use beauty as paradigmatic and prototypical aesthetic value in our vignettes, a wider variety of the types of aesthetic value could also be explored in future research.

Finally, regarding the implications of our studies for the ongoing discussion in art ontology, our results could be interpreted in two different ways. They might be understood as showing that ontological judgments about artworks are biased and should therefore be ignored. They also might be seen as providing philosophers with additional information to be accounted for in their theories. We do not take any stance in this paper. Our results, however, provide some support for Ridley (2003) and Neufeld's (2014) position that identity judgments on artworks are not purely categorical, but partially depend on aesthetic judgments.

## Conclusions

While our results show that the Phineas Gage effect does extend to aesthetic value, at least in the case of artworks, it seems easily overridden by changes in moral value or by material changes. This suggests that artworks are not essentialized in terms of their aesthetic value. While aesthetic value is a relevant and fairly important criterion in judgments of identity, it does not seem to be considered the central, essential part of artworks. If artworks are essentialized at all, we should look for the relevant properties elsewhere. However, judgments of the identity of artworks are also partially normative. Similar to many other seemingly non-normative judgments, folk ontological



judgments about artworks are, too, not independent from moral and aesthetic evaluation.

## Notes

1. Judgments of persistence also depend on the social relationship with the person: moral deterioration tends to be seen as disrupting the identity of people's friends, but on the opposite, moral improvement disrupts the identity of enemies (Everett, Skorburg, Livingston, Chituc, & Crockett, 2022).
2. Other thought experiments have sometimes been used to study the same asymmetry, for example, Derek Parfit's Russian Nobleman case (Parfit, 1984, p. 327).
3. There are also studies showing that perceived shortcomings of moral character can lead to denial of a person's humanity (Philips, 2022).
4. After having agreed to participate in the study, participants were presented the following: "To show that you are carefully reading instructions, please don't answer the first question whether or not you play a music instrument. In the response box below the second question 'If so, which instrument?', please write 'Thank you'".
5. The two sound files used in Study 2 can be listened to here <https://archive.org/details/messiaen-fetedeleau-original>.

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## Disclosure statement

No potential conflict of interest was reported by the author(s).

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## Data availability statement

All the data reported in this paper will be shared upon request.

## Ethical approval and consent

Ethical approval for this study was obtained at INSEAD/Sorbonne University Center for Behavioural Science, Paris, France. All methods were carried out in accordance with their guidelines and regulations. All participants signed an informed consent.

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