Maria Bendykowska

s5175151

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Group 22

Supervisor: prof. Ralf Cox

Second evaluator: Dr. rer. nat. Stefanie Enriquez-Geppert

In collaboration with: Wouter van Dam, Anna Dimitriou, Matúš Farkaš, Isa Nammensma, Yuhan Wang

June 27, 2025

Abstract

Artificial intelligence (AI) is increasingly entering creative fields, challenging the notion of authorship. Cultural narratives and personal experiences shape how people see AI's impact on a modern world. This creates a new type of competition for human artists. The present work focuses on how framing (positive vs negative) and information of the source (Human vs AI) influences the perception of creativity and intentionality of the artwork. In a questionnaire-based experiment (N = 199) it was found that people rate human-made art higher both on creativity and intentionality regardless of the framing. It was also found that framing had no effect on creativity nor intentionality ratings, indicating that people may not be as susceptible to manipulation especially while holding strong implicit biases. These findings highlight that artwork judgment is tied to human authorship and that future exploration of this topic is important for creative policies and ethical guidelines.

Keywords: AI, art, directional framing, source, meta-information

Art in a Frame: How Positive and Negative Descriptions Shape Perceptions of AI- and Human-made Art

A new form of competition is emerging, challenging the boundaries of human influence. In the past, new inventions- such as the printing press or nuclear weapons- were the tools we controlled. The printing press could not write an essay, nuclear bombs could not choose their targets, they simply extended human power. Nowadays, we are dealing not with tools but with agents. Artificial intelligence (AI) can learn, adapt, change, invent new ideas and can work independently from us. As Yuval Noah Harari notes in "Nexus" (2024) we are creating something that may soon compete directly with us as human beings.

Public perceptions reflect this tension. Some see AI as a technological advancement and a powerful tool for expanding human possibilities, while others as a medium that poses threat and constrains our privacy and freedom. Our pre-existing beliefs about algorithms create those conflicting views (Chiarella et al., 2022). Mass media, past experiences or social opinion shape our schemas and subjective mental models that can influence people's behaviour and decision making (Pataranutaporn, 2023).

Art and AI

Even art, once thought to be uniquely human, now can be left in the hands of machines (Horton, 2023). Creativity for a long time has been seen as a defining human characteristic (Bellaiche et al., 2023), but now AI-generated content blurs the line between human and machine creative influences. When trying to distinguish written poetry (Gibbs, 2016), music (Harari, 2017) or artworks (Demmer et al., 2023), people fail to detect which is human-made and which is AI-generated. It was also found that people tend to have an implicit bias towards AI art (Zhou, et al., 2023). For example, observers prefer AI-generated artworks over similar artworks painted

by humans in the absence of labels (Hees, 2025). However, when people are told the source of the artworks, their evaluations change. Bellaiche et al. (2023) found that even though the artworks were identical, those labeled human-made were rated higher on creativity and emotional depth compared to those labeled as AI-generated. In another study when people were aware of the source of the artwork they tended to rate art generated by AI lower in various dimensions—such as perceived skill, creativity, and monetary worth (Horton, 2023). This suggests that beliefs about the source of a particular piece of art strongly influences people's evaluations. Whether these opinions are created by the media coverage (Brewer et al., 2025) or because "it shakes people's deep-rooted anthropocentric views of the world" (Millet, et al., 2023), societies attitudes towards AI can have an impact on the future of ethical guidelines and standards for AI development. Thus, studying how the knowledge of the source can impact our mental models is crucial for shaping future technological and artistic directions.

Yet it is not only the *source* of the artwork that may influence people's evaluations, but also *how* this source is framed. In other words, not only knowing that the artwork has been AI or Human produced, but also the way it is expressed, positively or negatively, can have an impact on its ratings. Framing is one functioning mechanism for shaping people's opinion about AI. News framing, for example, has been shown to impact the way people respond to new technology (Brewer, 2025). Interestingly, a lot of research has focused on general exposure to AI related framing, but there is a gap in terms of *directional framing,* for example presenting the source of the artwork positively or negatively. Brewer (2025) found that calling AI art "real art" versus as something that is raising "artist outrage", had effects on opinions. Palm and colleagues (2025) found that people who were positively framed, had higher evaluations and expectations about AI, compared to a group that was negatively framed. Building on this, the present study

aims to investigate both the impact of the source (Human vs AI) and framing (positive vs negative) on peoples' judgment of art.

Another aspect that should be taken into consideration is the interaction between the source and the framing. One could hypothesize that when the source of the artwork is unfamiliar or ambiguous such as AI, its interpretation and meaning could rely more on external cues. In such cases, framing could have a stronger effect on AI-generated artworks, being more susceptible to framing (Messingschlager, 2023). Whereas human art may be seen as naturally communicative and meaningful. In this situation human art could be robust to external contexts because the source itself shows significant intentional impact (Bellaiche, 2023).

Creativity and intentionality in art

To understand how people value and use algorithms in creative fields it is crucial to explore creativity and intentionality. Creativity for long has been considered a characteristic human trait – Sawyer (2012) described creativity as "What makes us human", highlighting its deep connection to human cognition and cultural expression (Cheng, 2022). However, now as algorithms can produce art which is often indistinguishable from human-made one, such statements are put into question.

What is more, Currie (2011) argues that looking for, finding, and assigning intentionality may be a general human trait and an important part of our cognition. Jacquette (2011) describes intentionality as a primitive aspect that is crucial to how we attribute meaning to objects. In other words, perceiving intentionality in art is not optional, it is central to how we interpret and receive art.

Current study

Building on that, the present study will focus on how positive and negative descriptions of both Human-made and AI-generated artworks influence perceptions of creativity and intentionality. The study employs an experimental design in which positive and negative descriptions were combined with Human-made and AI-generated artworks, resulting in four different conditions: positive-human, negative-human, positive-AI, and negative-AI. The dependent variables are the measures of creativity and intentionality, while the independent variables are the framing (positive vs negative) and the source of the artwork (Human vs AI). Importantly, no deception was used, artworks labeled as 'AI', have been indeed generated by AI and artwork labeled as 'Human', have been indeed created by human artists. In line with previous studies, this one predicts that positive framing will result in higher ratings of perceived creativity and intentionality (Palm, 2025):

Hypothesis 1a: *Paintings presented with a positive framing will be rated higher in perceived creativity compared to those presented with a negative framing.*

Hypothesis 1b: *Paintings presented with a positive framing will be rated higher in perceived intentionality compared to those presented with a negative framing.*

Because of the general bias against AI (Millet et al., 2023), the hypothesis regarding the source are as follows:

Hypothesis 2a: *AI-generated paintings will be rated lower on perceived creativity compared to human-made paintings.*

Hypothesis 2b: *AI-generated paintings will be rated lower on perceived intentionality compared to human-made paintings.*

To examine the interaction between framing and source of the artwork following predictions were made (Messingschlager, 2023, Bellaiche, 2023):

Hypothesis 3a*: Positively framed AI-generated painting will be rated higher on creativity compared to negatively framed AI-generated paintings, whereas this difference will be absent for the human-made paintings.*

Hypothesis 3b: *Positively framed AI-generated paintings will be rated higher on intentionality compared to negatively framed AI-generated paintings, whereas this difference will be absent for the human-made paintings.*

Methods

Participants

In total, 258 people participated in the study. From these, 43 participants were excluded because of not completing the survey or giving consent. 16 participants were excluded for not passing the control question designed to check whether they are paying attention. The removal resulted in a final 199 participants included in the analysis (143 female; 47 male; two non-binary; seven preferred not to say/self - described). Most participants (n = 157; 79%) were in the age group 18-24 years old.

Participants took part either in exchange for course credits or voluntarily without reward. Convenience and snowball sampling was used - the link for this study had been sent around in online group-chats, to friends and acquaintances of the researchers, encouraging people to share the link further. The study had also been posted on the SONA study system of the University of Groningen.

The research was approved and conducted in accordance with the ethical codes and regulations of the Faculty of Behavioural and Social Sciences at the University of Groningen (registration code: PSY-2425-S-0337).

Materials

The study ran on Qualtrics (https://www.qualtrics.com/) and was available in English and Dutch. Participants completed the survey on their own devices without hardware restrictions.

Artworks

From the artworks used, six were human-made, and six artificial intelligence (AI) - generated. See Appendix A for all artworks. Only abstract artworks were selected for reasons discussed in the introduction. Abstract was defined as no figurative elements present. Moreover, images were selected so that human-made and AI-generated artworks were pairwise similar in color, composition or dynamic.

Artwork Descriptions

Every artwork was preceded by a short textual description that framed the work either neutrally, positively, or negatively and mentioned origin. The descriptions were created by the research team specifically for this paper. There were two AI-generated positive, two AI-generated negative, two AI-generated negative, two human-made positive, two human-made negative and two human-made neutral descriptions. There was no deception on the origin of artworks. The framing was not based on actual facts about the artworks but was made-up. For a list of all descriptions, as well as their translations into Dutch, see Appendix B.

Intentionality, Beauty and Creativity

Participants answered three evaluative statements about intentionality, creativity and beauty using sliders on a scale ranging from 0 to 100, based on Cox et al. 2024. For ‘beauty’ the

statement “I find this work beautiful” was presented. A score of 0 represented “strongly disagree”, and a score of 100 represented “strongly agree”. For ‘intentionality’ and ‘creativity’ the statements “In my opinion, the level of intentionality involved in the creation of this work is…” and “In my opinion, the level of creativity involved in the creation of this work is…” were presented, respectively. A score of 0 indicated “very low” and a score of 100 indicated “very high”. For the translations of these statements, see Appendix C.

Geneva Emotion Wheel

Participants were then presented with the Geneva Emotion Wheel (GEW), a tool to label emotions and record emotional intensity and valence in surveys (Scherer, 2005). Participants were asked to select the emotion-label that best captured their emotional response to the artwork, as well as indicate the intensity of that emotion, within one click. They were, for example, able to choose between emotions such as ‘Anger’, ‘Surprise’, ‘Fear’ or ‘Joy’. If no emotion was experienced, they could select the “None” option, and if their emotion was not represented in the wheel, they could select “Other”. Cronbach's α is not specified. An image of the GEW from our study, along with all the emotions and their translations, can be found in Appendix D.

Aesthetic Fluency Scale

The aesthetic fluency scale was used as an approximate measure for art knowledge (Cotter et al., 2023). Due to time constraints for the survey, the short version of the questionnaire was used. Participants' familiarity with 10 artists and art-related terms was assessed. Question 11 was a control question, used as an exclusion criterion for analysis. The questionnaire presents a term, for example “Gouache” and gives three response options - “I don’t really know anything about this artist or term”, “I’m familiar with this artist or term”, and “I know a lot about this

artist or term". Cronbach's α was 0.84. For the translations of the response options, see Appendix C.

General Attitudes toward Artificial Intelligence Scale

Participants completed an attitude scale assessing their attitudes of AI, consisting of five statements adapted from the General Attitudes toward Artificial Intelligence Scale (GAAIS, Schepman & Rodway, 2020). "Artificial Intelligence is exciting", "I am impressed by what Artificial Intelligence can do", "There are many beneficial applications of Artificial Intelligence", "I am interested in using artificially intelligent systems in my daily life", and "Artificial Intelligence can have positive impacts on people's wellbeing" were answered on sliders ranging from 0 to 100 in steps of 10, from strongly disagree to strongly agree. Cronbach's α was 0.89. For the translations of the response options, see Appendix C.

Procedure

After accessing the study environment, participants were informed about the study and its procedure, and then signed an informed consent. Next, participants were asked about age, having five options - 18-24, 25-34, 35-44, 45-54, or 55+ years old, and about gender, also having five options - male, female, non-binary, prefer to self describe, or prefer not to say.

The respondents were distributed equally among six experimental groups. Each group viewed the same 12 artworks and read the same descriptions, but the description–artwork pairings varied across groups, as shown in Table 1. The sequence of description-artwork presentation was randomised per participant.

First, participants evaluated the 12 artworks. Each artwork was preceded by one of the descriptions. There was no time limit to seeing the description. Participants had to click "next" to

proceed to the next screen showing an artwork. On this screen descriptions were not visible anymore.

Each artwork appeared for a minimum of five seconds. After that the participant could choose freely when to continue, by clicking “next”. The time spent looking at each artwork, between first appearance of the artwork until clicking “next”, was measured for every participant, later used as the looking time variable.

In the next step the artwork was not visible anymore. Participants answered the three evaluative statements concerning intentionality, creativity and beauty and continued. On the same page they used the GEW.

After all artworks had been evaluated, participants filled out the two questionnaires. First, the 11-item Aesthetic Fluency scale was presented (Cotter et al., 2023). On the next page, participants completed the General Attitudes toward Artificial Intelligence Scale (GAAIS, Schepman & Rodway, 2020).

The study concluded with a debriefing screen that explained the manipulation of the framings, as well as the looking-time measurements, and informed all participants that they were not deceived of the true origin of each artwork. Participants were thanked for their participation and, if applicable, directed to collect their course credits through the university’s SONA system.

Table 1

Artwork x Description Pairings per Group for Human-made and AI-generated artworks.

Group	Positive Description		Negative Description		Neutral Description	
	D_1	D_2	D_3	D_4	D_5	D_6
1	1	2	3	4	5	6
2	6	1	2	3	4	5
3	5	6	1	2	3	4
4	4	5	6	1	2	3
5	3	4	5	6	1	2
6	2	3	4	5	6	1

Note: The numbers under description are representative of the artworks assigned in that group, see Appendix A. D_1, etc. are the human and AI descriptions, see Appendix B.

Data analysis

The mean completion time of the study was 2122 seconds (35.4 minutes), while the median time was 726 seconds (12.1 minutes). This shows the skewed distribution of the duration times, most likely because of participants not completing the study in one go. Researchers made the decision to exclude participants, whose duration time was under 300 seconds (5 minutes). This duration had been determined by doing a trial run to see what would be the lowest time for a participation that still seems serious. We considered times under 300 seconds a non-serious engagement with the experiment for the sake of speed. This decision had no consequences, as the lowest completion time was 302 seconds, and thus no participants were excluded for too low completion time.

Of all the collected data, only the creativity and intentionality measurements were used in the present study. Also, only the negative and positive framing conditions were analysed, both for Human-made and AI-generated artworks. To test the effect of framing (positive vs negative) and source of the artwork (AI vs Human) on perceived creativity and intentionality 2 x 2 repeated-measures ANOVA was conducted, separately for creativity and intentionality. The analysis was conducted in JASP (Version 0.18.3, JASP team 2024).

Results

Descriptives

Descriptive statistics are presented in Table 2 for each dependent variable. Overall, human-made paintings were rated higher both in creativity and intentionality. In the AI condition artworks presented with a positive framing received higher perceived intentionality ratings. However, creativity ratings of AI-generated artworks in the negative condition were rated higher than positively framed ones. It is important to note that in the Human condition the paintings with positive framing were rated lower on creativity and intentionality compared to those with negative framing.

Table 2

Means and Standard Deviations (between brackets) for Creativity and Intentionality ratings by Source and Framing conditions.

	Creativity			Intentionality		
Conditions	Positive	Negative	Overall	Positive	Negative	Overall
AI	34.4 (23.8)	35.3 (23.0)	35.0 (21.6)	37.6 (24.1)	36.9 (22.8)	37.2 (21.6)
Human	47.3 (21.4)	48.4 (22.0)	47.8 (18.1)	48.9 (22.8)	50.9 (22.3)	49.9 (19.8)
Overall	40.8 (17.9)	42.0 (19.2)		43.2 (18.8)	43.9 (18.8)	

Note: The overall scores are grand means across conditions. N= 199.

Assumptions checks

Although the Shapiro-Wilk test indicated violation of normality (p = .001, for all conditions; see Appendix E), given the sample size (N = 199), the Repeated Measures ANOVA is considered robust to this violation. Nevertheless the results should be interpreted with caution, considering the potential deviation from normality. After analyzing box-plots no severe outliers were found, thus no further data was eliminated from analysis.

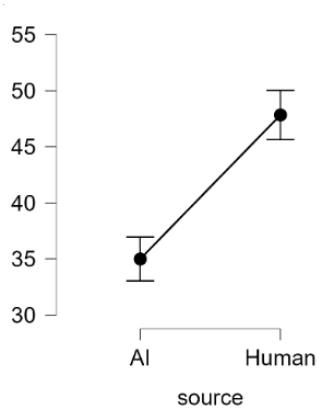
Main analysis for creativity

The main effect for Framing was not significant, $F(1, 198) = 1.184$, $p = .278$, $\eta^2 = .001$. There was no significant difference in creativity ratings between positively (M = 40.8) and negatively (M = 42.0) framed artworks, regardless of whether they were human-made or AI-generated. Hypothesis 1a was not supported.

In terms of creativity ratings, a significant main effect was observed for Source, $F(1, 198) = 76.774$, $p < .001$, $\eta^2 = .156$. The main effect plot is shown in Figure 1. Effect size suggests a large effect, indicating that knowledge about the source of the artwork plays a substantial role in perceived creativity. Human paintings ($M = 47.8$) were rated as significantly more creative than AI- generated ones ($M = 35.0$) regardless of the framing. This supports Hypothesis 2a.

Figure 1

Main effect plot for Source on perceived creativity ratings.



Note: Error bars represent 95% confidence intervals

The interaction between framing and source was not significant, $F(1, 198) = .005$, $p = .944$ indicating that the effect of framing did not differ depending on the Source. Given no significant interaction no further contrasts were computed. These results suggest that Hypothesis 3a must be rejected. No evidence was found that framing influences perceived creativity ratings for AI-generated paintings nor human ones.

Main analysis for Intentionality

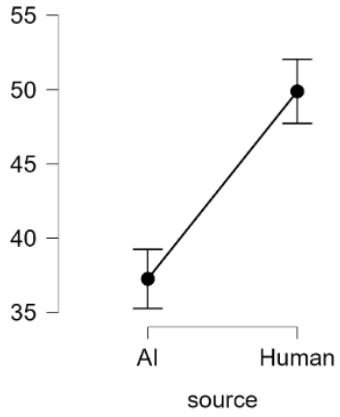
Considering Intentionality, Hypothesis 1b cannot be accepted as the main effect for framing was not significant $F(1, 198) = .494$, $p = .484$. There was no significant difference in

intentionality ratings between the artworks with positive description ($M = 43.2$) compared to negative ones ($M = 43.9$), regardless of the source.

On the other hand, a significant main effect was found for the Source $F(1, 198) = 64.46$, $p = < .001$, $\eta^2 = .152$. Main effect plot for intentionality can be seen in Figure 2. Effect size suggests a large effect, indicating that knowing the source of the artwork plays a substantial role in how intentional it is perceived to be. Hypothesis 2b can be accepted, showing that Human-made paintings ($M = 49.9$) were rated significantly higher on intentionality compared to AI-generated paintings ($M = 37.2$) regardless of the framing.

Figure 2

Main effect plot for Source on perceived intentionality ratings.



Note: Error bars represent 95% confidence intervals

The interaction between framing and source was not significant, $F(1, 198) = 1.74$, $p = <0.189$, $\eta^2 = .002$ for intentionality ratings. This suggests that there is no evidence that framing influences perceived intentionality ratings for AI-generated paintings nor for human-made. Thus, Hypothesis 3b must be rejected.

Discussion

The results indicated that human-made paintings were rated significantly higher on creativity and intentionality compared to AI-generated ones regardless of framing. This aligns well with previous research highlighting that people tend to have a negative bias against AI-generated art and that they tend to rate these artworks lower on various dimensions (Horton, 2023). This might be explained by anthropocentric beliefs. People tend to believe that creativity is a uniquely human characteristic, affecting their perception of AI-generated art (Millet, 2023). Bellaiche (2023) distinguished art experiencing between two things: (1) A purely physical stimulus and (2) a deeper communicative medium of the human experience. It seems that AI-generated art is unable to replicate the human awareness that the artwork is a form of human expression, even if it can meet our physical and aesthetic expectations. This highlights the importance of the receiver's recognition that an artist intended to communicate something through a particular piece.

The study also found no significant effect for framing on neither creativity nor intentionality. This might be due to framing manipulation not being sufficiently strong to influence participants ratings. In other words, the positive or negative description before the artwork might not have been sufficient to overcome strong beliefs about AI or Human authorship. As previous studies showed humans hold strong opinions about AI, often negative ones (Pew Research Center, 2023), also holding an implicit bias against AI (Zhou, 2023). Deep rooted attitudes can resist explicit manipulations like framing (Fazio, 1990). If participants have already had a strong negative opinion about AI, a simple description might have not impacted their ratings of creativity and intentionality (Rosenthal & Rosnow, 2008). What is also important to highlight is the characteristics of the sample. The study was done mainly on academic

psychology students and their relatives or friends-individuals likely to have a higher level of education. It may be hypothesised that such a sample may not be susceptible to a brief, descriptive framing. It might be possible that changing the delivery and strength of the framing could have a different effect. For example providing longer and more persuasive descriptions through an expert-led audio guide.

Lastly, it was found that framing, that is, the accompanying positive or negative statement, did not interact with the source of the artwork. This means that the effect of a positive or negative framing did not vary depending on whether the artwork shown was Human-made or AI-generated. One explanation may be that the information about the source itself was so strong that it covered the framing effect, rather than interacted with it. This challenges the previous expectations of AI being more susceptible to context cues. Human-made art was expected to be less affected by external cues such as positive or negative labels as it is perceived as deeper and more emotional or intentional (Bellaiche, 2023). Nevertheless, this idea was not supported. This could highlight the important role of authorship leaving the impact of framing behind in terms of creativity and intentionality judgments. On the other hand, such claims are risky as the results were found in a particular context of this study and its limitations, explained below, should be taken into consideration.

Strengths, Limitations, and Further Research

The study addresses a highly relevant topic. The merging of AI and creative fields, create many questions and concerns that should be looked into for guiding technological and artistic development in the right directions. The experimental control made sure that all participants were exposed to all conditions, that is different sources and framings of the artworks. This reduced the between-subject variability. What is more, the study explores the gap in the literature

on directional-framing and how meta-information (labels or framing) influences perception of art.

Nevertheless, the study has several limitations, which should be taken into account when interpreting the findings. First, the lack of strong framing might have limited its ability to influence participants' ratings and implicit or deeper attitudes. The short written descriptions might not have been enough to bring up an emotional reaction and meaningful engagement with the artworks. Future research could explore different framing methods. Additionally, measuring previous AI attitudes could have provided better insights into deep rooted beliefs and judgments of creativity and intentionality. Thus, it could be beneficial to shift focus onto pre-existing attitudes towards AI-generated and Human-made art. Moreover, the artworks were viewed in an online, artificial setting, which lacked the emotional engagement typical for art galleries or monuments (churches, palaces). On the other hand, as art is increasingly experienced in digital context, it is important to differentiate the interpretation and perception of art depending on the environment. Thus, it could be beneficial to apply the research in more context-relevant environments both online and in art museums or exhibitions, as meta-information (e.g., labels, descriptions) can vary and have different impacts across contexts. What is more, one needs to remember that this study focused on abstract art. Perceptions of AI vs Human art might differ depending on art style, which limits the generalizability of the findings. Abstract art is considered more ambiguous, especially for non-experts, where figurative art is usually considered less challenging to interpret. Additionally, in general figurative art is valued higher by naive viewers (Szubielska, 2021). On the other hand, it was shown that while experiencing abstract art, viewers rely more heavily on labels and description compared to representational art (Szubielska, 2021). Therefore, in the context of framing effect, figurative art probably would not

have shown different results. Nevertheless, exploring bias against AI-generated art across diverse forms of art could be valuable. Lastly, the sample was taken mainly from western culture, focusing on psychology students. The majority of the sample also described themselves as females. Thus, researching this topic with a more diverse sample, also considering cultural differences, level of education and art expertise could reveal different patterns.

Practical implications

The study yields several practical implications for the interpretation and development of AI and creative fields. First of all, the findings can impact how art is labeled, underscoring the importance of human authorship labeling. For example artists or curators might benefit from highlighting human authorship when presenting creative works. This could increase overall ratings and reception of the art as well as its market worth.

The study is also raising ethical questions such as “Should AI involvement be highlighted?”, “Does it create unnecessary bias?”, “What happens if there would be no regulation in terms of AI labeling?”. Of course, the paper also emphasizes the importance of engaging in critical discussions, encouraging further research and careful observation of AI development. With rising AI use it is important to be aware of the biases that we, as human observers, have. Being aware of how these biases shape our judgments, can promote a more thoughtful and responsible engagement with AI technologies. This also highlights the importance of policy, legal regulations and ethics in the use of AI. Policymakers should be aware of the impact of meta-information, human biases and pre-existing attitudes to manage the integration of technology more effectively.

Conclusion

Taken together this work emphasized the importance of following AI development and its impact on creative fields. It has provided support for bias against AI, more concretely it showed that AI artworks are seen as less intentional and creative compared to Human-made ones. It also highlighted a lack of effect of framing on creativity and intentionality ratings. Additionally, it highlighted the importance of future research in terms of directional framing and explored how the world's perception of artificial intelligence can impact the future direction in this field. It showed how perceived creativity and intentionality are strongly connected to human-made works, suggesting that machine involvement in a creative process may continue to face skepticism, highlighting lack of real creativity and intentionality. As the field evolves it will be important to take these pre-existing biases and cultural narratives into consideration while shaping both policy and presentation of AI.

References

Brewer, P. R., Cuddy, L., Dawson, W., et al. (2025). Artists or art thieves? Media use, media messages, and public opinion about artificial intelligence image generators. *AI & Soc, 40*, 77–87. https://doi.org/10.1007/s00146-023-01854-3

Bellaiche, L., Shahi, R., Turpin, M. H., Ragnhildstveit, A., Sprockett, S., Barr, N., Christensen, A., & Seli, P. (2023). Humans versus AI: Whether and why we prefer human-created compared to AI-created artwork. *Cognitive Research: Principles and Implications, 8*(1), 42. https://doi.org/10.1186/s41235-023-00499-6

Best Practice AI. (n.d.). Unilever saved over 50,000 hours in candidate interview time and delivered over £1m annual savings and improved candidate diversity with machine analysis of video-based interviewing. *Best Practice AI*. Retrieved March 22, 2025, from https://www.bestpractice.ai

Cheng, M. (2022). The creativity of artificial intelligence in art. *Proceedings, 81*, 110. https://doi.org/10.3390/proceedings2022081110

Chiarella, S. G., Torromino, G., Gagliardi, D. M., Rossi, D., Babiloni, F., & Cartocci, G. (2022). Investigating the negative bias towards artificial intelligence: Effects of prior assignment of AI-authorship on the aesthetic appreciation of abstract paintings. *Computers in Human Behavior, 137*, 107406. https://doi.org/10.1016/j.chb.2022.107406

Cotter, K. N., Rodriguez-Boerwinkle, R. M., Christensen, A. P., Fekete, A., Smith, J. K., Smith, L. F., Tinio, P. P. L., & Silvia, P. J. (2023b). Updating the Aesthetic Fluency

Scale: Revised long and short forms for research in the psychology of the arts. *PLoS ONE*, *18*(2), e0281547. https://doi.org/10.1371/journal.pone.0281547

Cox, R. F. A., Schino, G., van Klaveren, L., & Wittingslow, R. (2024, October 23). Exploring the Skill-Tech Space: Art-Making Awareness Influences Experiencing Visual Artworks. https://doi.org/10.31219/osf.io/jxnwc

Currie, G. (2011). Empathy for objects. In A. Coplan & P. Goldie (Eds.), *Empathy: Philosophical and psychological perspectives* (pp. 82–95). Oxford University Press.

Demmer, T. R., Kühnapfel, C., Fingerhut, J., & Pelowski, M. (2023). Does an emotional connection to art really require a human artist? Emotion and intentionality responses to AI- versus human-created art and impact on aesthetic experience. *Computers in Human Behavior, 148*, 107875. https://doi.org/10.1016/j.chb.2023.107875

Dastin, J. (2018, October 10). Amazon scraps secret AI recruiting tool that showed bias against women. Reuters. Retrieved from https://www.reuters.com

Fazio, R. H. (1990). A practical guide to the use of response latency in social psychological research. In C. Hendrick & M. S. Clark (Eds.), *Research methods in personality and social psychology* (Vol. 11, pp. 74–97). Sage.

Gibbs, S. (2016, May 17). Google AI project writes poetry which could make a vogon proud. *The Guardian, Guardian News and Media*. Retrieved from https://www.theguardian.com/technology/2016/may/17/googles-ai-write-poetry-stark-dramatic-vogons

Harari, Y. N. (2017). *Homo Deus: A brief history of tomorrow*. Harper.

Harari, Y. N. (2024). *Nexus: A brief history of information networks from the Stone Age to AI*. Sandycove.

Horton, C. B., Jr, White, M. W., & Iyengar, S. S. (2023). Bias against AI art can enhance perceptions of human creativity. *Scientific Reports, 13*(1), 19001. https://doi.org/10.1038/s41598-023-45202-3

Jacquette, D. Intentionality as a Conceptually Primitive Relation. *Acta Anal* **26**, 15–35 (2011). https://doi.org/10.1007/s12136-010-0117-6

Messingschlager, Tanja & Appel, Markus. (2023). Mind ascribed to AI and the appreciation of AI-generated art. New Media & Society. 27. 10.1177/14614448231200248.

Palm, R., Kingsland, J. T., & Bolsen, T. (2025). Framing Affects Support for the Development of Artificial Intelligence in the United States. *Journal of Communication*, advance online publication. https://doi.org/10.1177/10755470251317172

Pataranutaporn, P., Liu, R., Finn, E., et al. (2023). Influencing human–AI interaction by priming beliefs about AI can increase perceived trustworthiness, empathy, and effectiveness. *Nature Machine Intelligence*. https://doi.org/10.1038/s42256-023-00720-7

Pew Research Center. (2023, November 1). *More Americans are worried than excited about the increased use of AI in daily life.* https://www.pewresearch.org/internet/2023/11/01/more-americans-are-worried-than-excited-about-the-increased-use-of-ai-in-daily-life/

Rosenthal, R., & Rosnow, R. L. (2008). Essentials of Behavioral Research: Methods and Data Analysis. McGraw-Hill.

Samo, A., & Highhouse, S. (2023). Artificial intelligence and art: Identifying the aesthetic judgment factors that distinguish human- and machine-generated artwork. *Psychology of Aesthetics, Creativity, and the Arts.* Advance online publication. https://doi.org/10.1037/aca0000570

Sawyer, R. K., & Henriksen, D. (2023). *Explaining creativity: The science of human innovation* (3rd ed.). Oxford University Press. https://doi.org/10.1093/oso/9780197747537.001.0001

Schepman, A., & Rodway, P. (2020). Initial validation of the general attitudes towards Artificial Intelligence Scale. *Computers in Human Behavior Reports*, *1*, 100014. https://doi.org/10.1016/j.chbr.2020.100014

Scherer, K. R. (2005). What are emotions? And how can they be measured? *Social Science Information*, *44*(4), 695–729. https://doi.org/10.1177/0539018405058216

Szubielska, M., Szymańska, A., & Augustynowicz, P. (2021). The pilot study on viewing times of artworks and labels and assessment of artworks in a gallery depending on the abstractness of a piece of art. *Polish Psychological Forum, 26(4), 451–466. https://doi.org/10.34767/PFP.2021.04.06*

Tomas, V. (1958). Creativity in art. *The Philosophical Review, 67*(1), 1–15. https://www.jstor.org/stable/2182766

Turing, A. M. (1950). Computing machinery and intelligence. *Mind, 59*(236), 433–460.

van Hees J, Grootswagers T, Quek GL and Varlet M (2025) Human perception of art in the age of artificial intelligence. Front. Psychol. 15:1497469. doi: 10.3389/fpsyg.2024.1497469

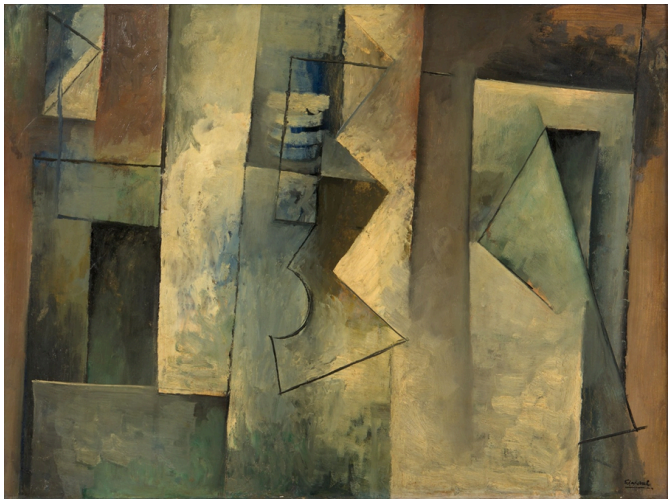
Zhou, Y., & Kawabata, H. (2023). Eyes can tell: Assessment of implicit attitudes toward AI art. *i-Perception, 14*(5), 20416695231209846. https://doi.org/10.1177/20416695231209846

Appendix A

Human-made pictures

Artwork 1

Sans titre (Composition brune II) by Youla Chapoval - Artvee. (o. D.). Artvee. https://artvee.com/dl/sans-titre-composition-brune-ii/#00

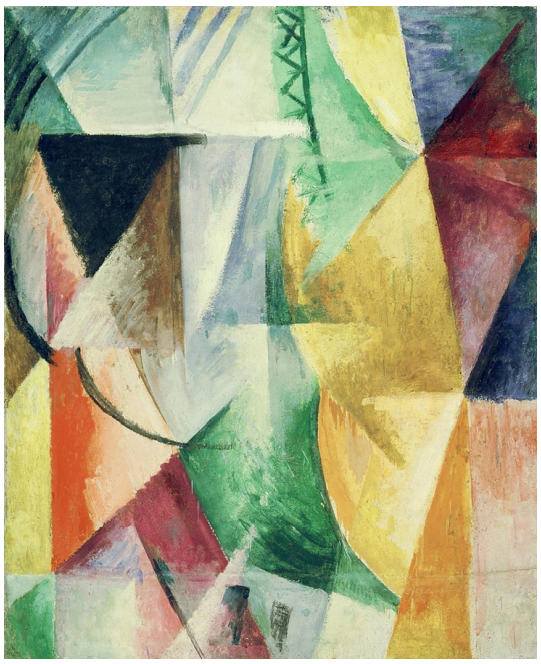


Artwork 2

abstract paintings - Abstract paintings Alessandro Tognin. (2023, 3. September). Abstract Paintings Alessandro Tognin. https://www.dreamsart.it/product/abstract-paintings/

Artwork 3

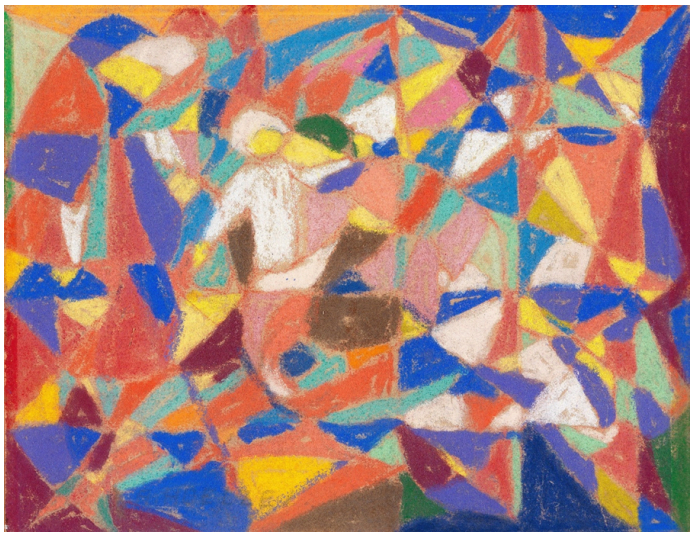
Une fenêtre by Robert Delaunay - Artvee. (o. D.). Artvee. https://artvee.com/dl/une-fenetre/#00



Artwork 4

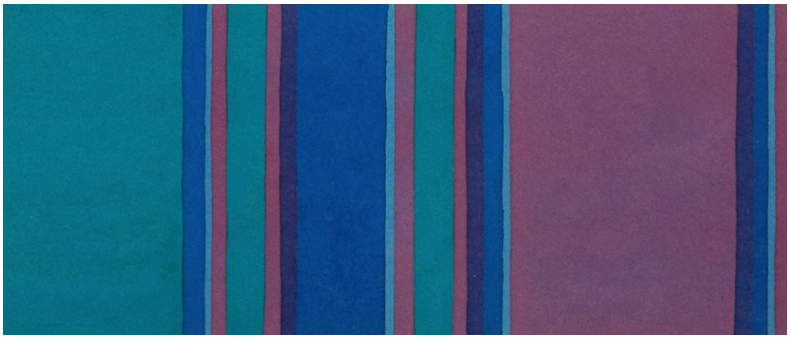
Figürliche Komposition by Adolf Hölzel - Artvee. (o. D.). Artvee.

https://artvee.com/dl/figurliche-komposition/#00



Artwork 5

Anitra by Anonymous - Artvee. (o. D.). Artvee. https://artvee.com/dl/anitra/#00



Artwork 6

Komposition by Otto Freundlich - Artvee. (o. D.). Artvee.

https://artvee.com/dl/komposition-14/#0

AI Artworks

Artwork 1

Exploring Abstract Art with AI. (2024, 24. Juli).

https://deepdreamgenerator.com/blog/abstract-art-and-ai

Artwork 2

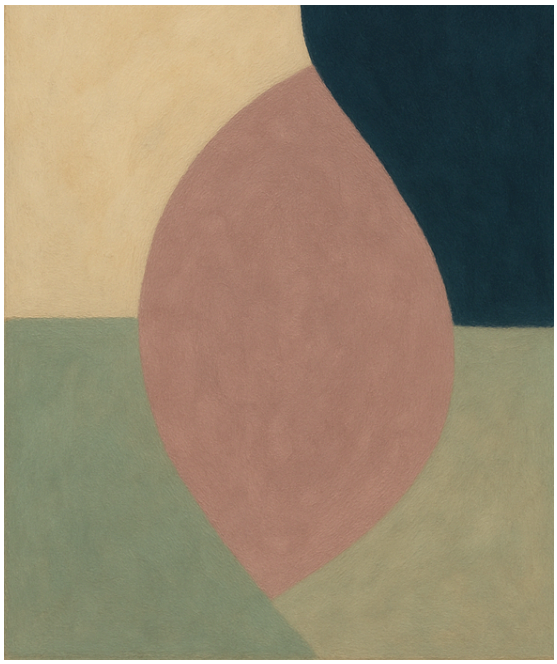
Abstrakte Erdelemente auf Leinwand. (2025, 25. April). ChatGPT.

https://chatgpt.com/s/m_680b937d8b548191960f2c69fc085d2b

Artwork 3

Geometrische Abstraktion in Pastellfarben. (2025, 25. April). ChatGPT.

https://chatgpt.com/s/m_680b9334cf0c819189fd5f1b73c92c39



Artwork 4

Exploring Abstract Art with AI. (2024, 24. Juli).

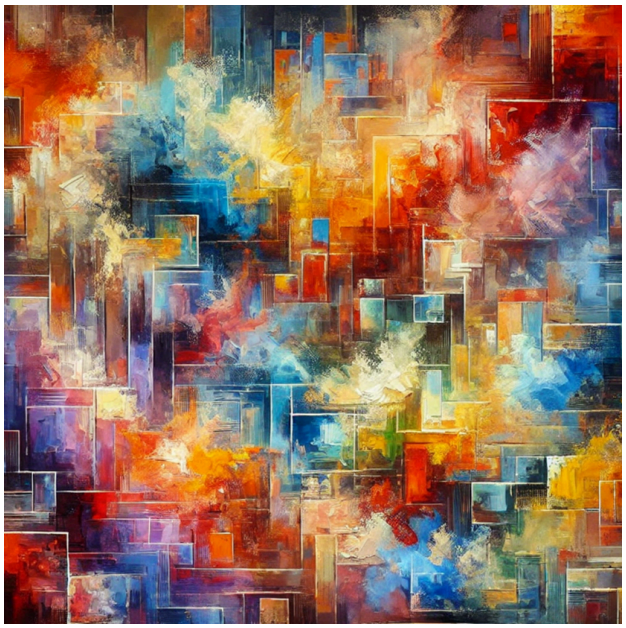
https://deepdreamgenerator.com/blog/abstract-art-and-ai

Artwork 5

AI-generated abstract painting inspired by the sensation of drinking three espressos,.

(2025, 7.April). DALL·E via ChatGPT.

https://chatgpt.com/



Artwork 6

Abstrakte geometrische Komposition mit Farben. (2025, 25. April). ChatGPT.

https://chatgpt.com/s/m_680b926049d08191a564bb90dbfbf720

Appendix B

Artwork Descriptions

Positive Human Descriptions

HUM Description 1. "This artwork, created by a skilled artist, demonstrates mastery of technique and showcases years of experience and dedication to the craft."

"Dit kunstwerk, gemaakt door een getalenteerde kunstenaar, getuigt van zijn meesterschap in de techniek en van jarenlange ervaring en toewijding aan het vak."

HUM Description 2. "Each detail in this piece reflects the artist's refined expertise and distinctive approach, making it a truly unique expression of artistic vision."

"Elk detail in dit stuk weerspiegelt de verfijnde expertise en de unieke aanpak van de kunstenaar, wat het tot een werkelijk unieke uiting van artistieke visie maakt."

Negative Human Descriptions

HUM Description 3. *"Despite being human-made, this artwork reveals the limitations of subjective interpretation, showing how even skilled artists can struggle with expression of their artistic vision."*

"Hoewel dit kunstwerk door mensen is gemaakt, toont het de beperkingen van subjectieve interpretatie en laat het zien hoe zelfs getalenteerde kunstenaars moeite kunnen hebben met het uiten van hun artistieke visie."

HUM Description 4. *"While created by hand, this piece reflects human biases and imperfections, highlighting how artistic vision is often constrained by personal and cultural influences."*

"Hoewel dit kunstwerk met de hand is gemaakt, zijn er toch menselijke vooroordelen en onvolkomenheden in het werk te zien. Het laat zien hoe de artistieke visie vaak wordt beperkt door persoonlijke en culturele invloeden."

Neutral Human Descriptions

HUM Description 5 and 6. *"This artwork is made by a human artist."*

"Dit kunstwerk is gemaakt door een menselijke kunstenaar."

Positive AI Descriptions

AI Description 1. *"This AI-generated piece demonstrates how technology is capable of artistic expression, creating intricate and thought-provoking visuals with precision and uniqueness."*

"Dit door AI gegenereerde kunstwerk laat zien hoe technologie artistieke expressie mogelijk maakt door complexe en tot nadenken stemmende beelden te creëren met precisie en uniciteit."

AI Description 2. *"Generated by advanced AI, this artwork pushes the boundaries, blending complex patterns and ideas beyond human imagination."*

"Dit kunstwerk is gemaakt met behulp van geavanceerde kunstmatige intelligentie (AI) en verlegt de grenzen door complexe patronen en ideeën te combineren die de menselijke verbeelding te boven gaan."

Negative AI Descriptions

AI Description 3. *"This artwork, generated by AI, demonstrates that even the most advanced technology fails to inspire, revealing the mechanical nature of algorithms."*

"Dit door AI gegenereerde kunstwerk laat zien dat zelfs de meest geavanceerde technologie niet kan inspireren en onthult de mechanische aard van algoritmes."

AI Description 4. *"Despite being produced by advanced technology, this AI-generated piece highlights the absence of genuine human inspiration and artistic intent."*

"Hoewel dit kunstwerk met behulp van geavanceerde technologie is gemaakt, benadrukt het de afwezigheid van echte menselijke inspiratie en artistieke intentie."

Neutral AI Description

AI Description 5 and 6. "*This artwork is generated by AI."*

"Dit kunstwerk is gegenereerd door AI."

Appendix C

Translations into Dutch

Beauty

"I find this work beautiful" - "Ik vind dit werk mooi"

A score of 0 = "strongly disagree" - "erg mee oneens"

A score of 100 = "strongly agree" - "erg mee eens"

Intentionality, Creativity

"In my opinion, the level of intentionality involved in the creation of this work is…" - "Naar mijn mening is het niveau van intentionaliteit dat betrokken is bij het maken van dit werk…"

"In my opinion, the level of creativity involved in the creation of this work is…" - "Naar mijn mening is het niveau van creativiteit dat betrokken is bij het maken van dit werk…"

A score of 0 = "very low" - "heel laag"

A score of 100 = "very high" - "heel hoog"

Aesthetic Fluency Scale

"I don't really know anything about this artist or term" - "Ik weet eigenlijk niets over deze kunstenaar of term"

"I'm familiar with this artist or term" - "Ik ben bekend met deze kunstenaar of term"

"I know a lot about this artist or term" - "Ik weet een hoop over deze kunstenaar of term"

General Attitudes toward Artificial Intelligence Scale

"Artificial Intelligence is exciting" - "Kunstmatige Intelligentie is uitdagend"

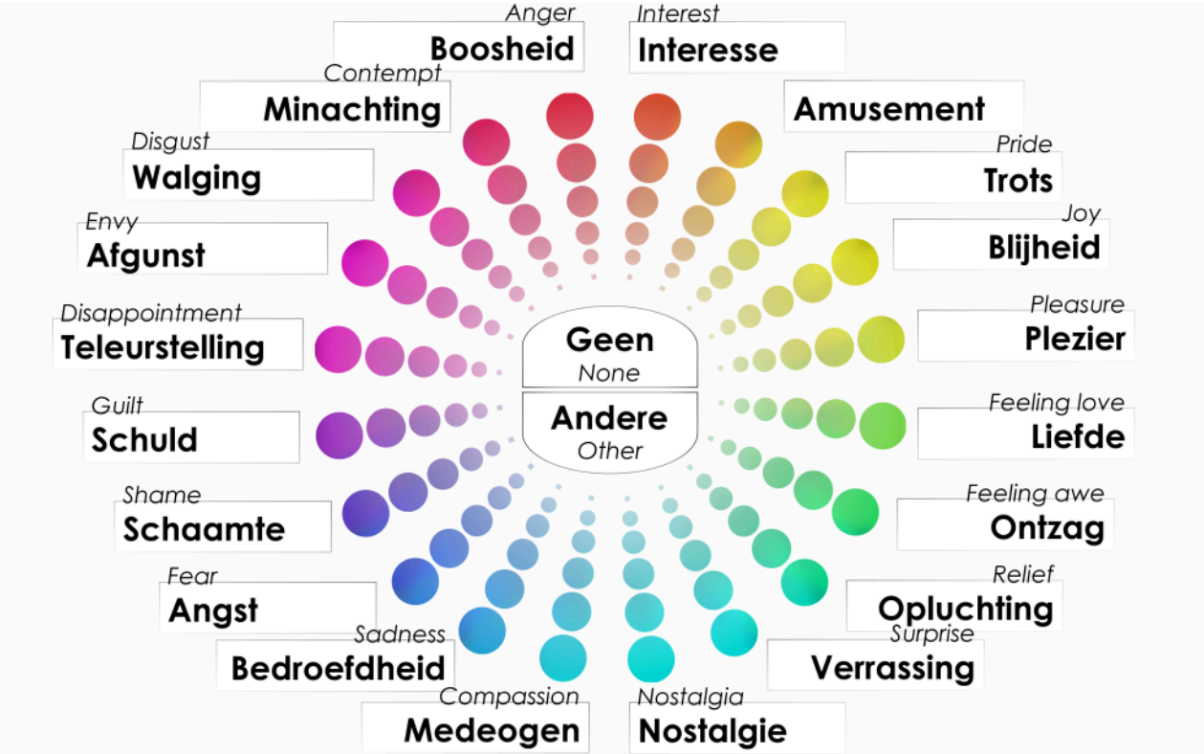
"I am impressed by what Artificial Intelligence can do" - "Ik ben onder de indruk van wat Kunstmatige Intelligentie kan doen"

“There are many beneficial applications of Artificial Intelligence” - “Er zijn veel nuttige toepassingen van Kunstmatige Intelligentie”

“I am interested in using artificially intelligent systems in my daily life” - “In mijn dagelijks leven ben ik geïntereseerd in het gebruik van Kunstmatige Intelligente systemen“

“Artificial Intelligence can have positive impacts on people's wellbeing” - “Kunstmatige Intelligentie kan een positieve impact hebben op het welzijn van mensen”

Appendix D


Anger
Boosheid
Interest
Interesse
Contempt
Minachting
Amusement
Disgust
Walging
Pride
Trots
Envy
Afgunst
Joy
Blijheid
Disappointment
Teleurstelling
Pleasure
Plezier
Geen
None
Andere
Other
Guilt
Schuld
Feeling love
Liefde
Shame
Schaamte
Feeling awe
Ontzag
Fear
Angst
Relief
Opluchting
Sadness
Bedroefdheid
Surprise
Verrassing
Compassion
Medeogen
Nostalgia
Nostalgie

Appendix E

Table 1

The shapiro-wilk test: creativity

	HUM_pos	*HUM_neg*	*AI_pos*	*AI_neg*
Shapiro-Wilk	0.981	0.981	0.958	0.970
P-value of Shapiro-Wilk	0.008	0.008	< .001	< .001

Table 2

The shapiro-wilk test: intentionality

	HUM_pos	*HUM_neg*	*AI_pos*	*AI_neg*
Shapiro-Wilk	0.971	0.978	0.963	0.967
P-value of Shapiro-Wilk	< .001	0.003	< .001	< .001

Figure 1

Box plots for outliers check

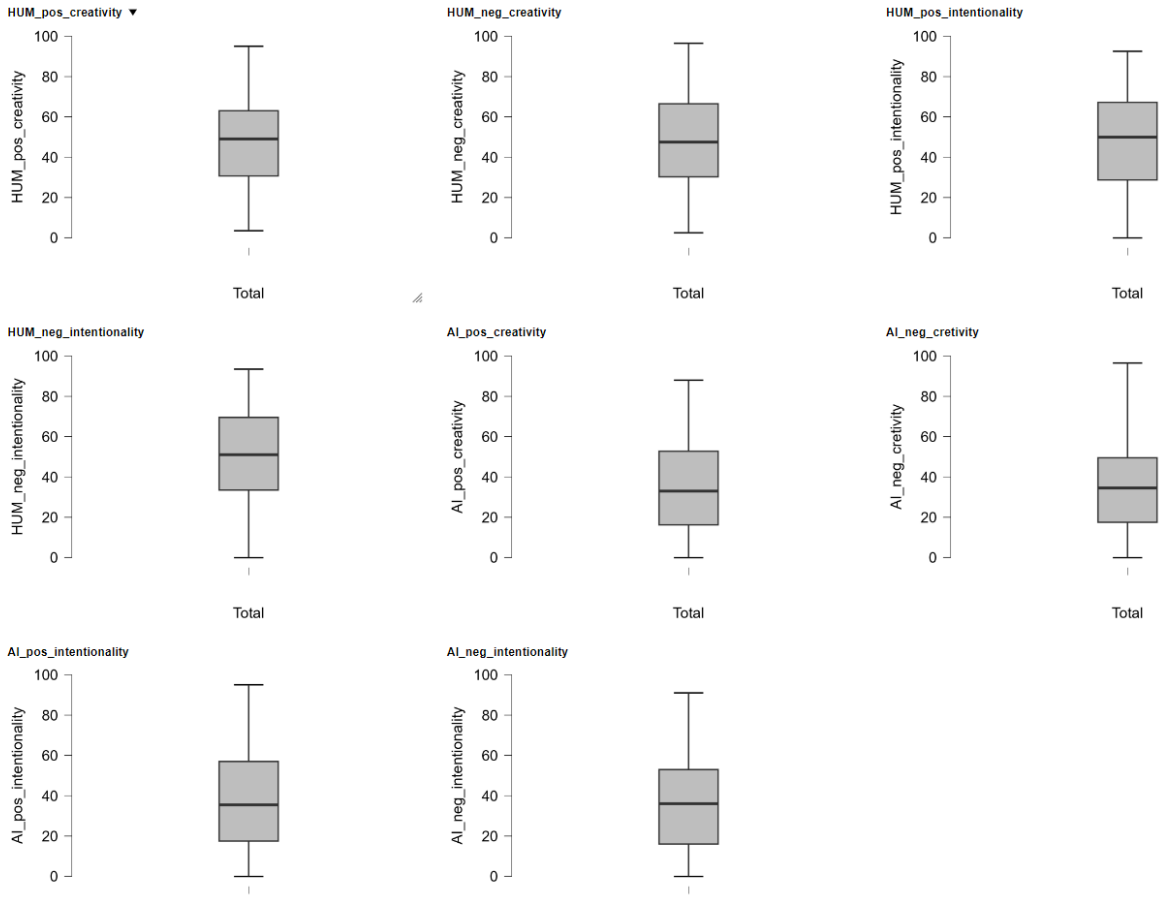


Figure 2

Q-Q plots for normality checks