

Perception and Evaluation of AI Generated Art

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ABSTRACT

Background: This research navigates the evolving landscape of human-AI interaction, exploring key dimensions of perception in the burgeoning era of artificial intelligence (AI). Delving into trust, ethical concerns, industrial impact beliefs, and image complexity, the study seeks to unravel how individuals attribute creative authorship to AI-generated content.

Methods: Employing rigorous quantitative analysis, this study investigates diverse perceptual facets with a sample of 124 participants. Statistical methods, including t-tests, correlation analysis, and effect size measures, were employed to scrutinize participants' attitudes and behaviors towards AI-generated images in response to varying perceptual factors with the help of Likert scale and AI-generated images. **Results:** The study unravels critical insights. Trust in AI-based recommendations surprisingly did not significantly affect participants' attributions of AI-generated images, revealing nuanced dynamics in trust perception. Additionally, heightened ethical concerns notably increased the likelihood of attributing AI-generated images to human creators. Moreover, image complexity exhibited a substantial negative correlation with AI attribution, indicating a cognitive interplay influencing perceptions. **Discussion:** These findings underscore the complex relationship between trust, ethical considerations, industry beliefs, and image intricacy in shaping attributions of AI-generated content. The implications of this research resonate in the AI revolution era, emphasizing the necessity for a deeper understanding of AI's potential and its alignment with human attributions. To harness the transformative power of AI, comprehending these dynamics is crucial, ensuring a harmonious and optimized integration of AI in various domains.

Keywords: Perception, Evaluation, AI Generated Art

The influence of artificial intelligence (AI) on the artistic realm, notably through technologies like Generative Adversarial Networks (GANs), has ushered in a transformative era, challenging established perceptions of creativity and authorship. In this context, the field of human-computer interaction (HCI) has recently acknowledged the existence of perception biases against AI, machines, or computers, particularly in the context of art. (Barabanshikov & Marinova, 2021) However, while these biases have been widely cited, empirical evidence to substantiate them has remained scarce. This study embarks on a comprehensive exploration into the perceptual dynamics between humans and AI-generated art. By conducting a rigorous study involving 124 participants, this research seeks to empirically examine how individuals perceive and evaluate art created by AI,

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comparing it to human-made art. In a landscape where the boundaries of artistic authorship are continually evolving, this study aims to shed light on the nuances of human perception towards AI-generated art, substantiating existing discourse with empirical findings.

Forwarding growth of AI technology

The emergence of deepfake technology in 2017 marked a pivotal moment in the realm of artificial intelligence, particularly with regards to its influence on art and human perception. Deepfakes, powered by complex deep learning algorithms inspired by artificial neural networks (ANNs) mirroring the intricacies of the human brain, have garnered significant attention for their remarkable ability to seamlessly replicate a person's likeness in video recordings. (*Becker & Laycock, 2023*) What's fascinating is that this replication process mirrors the learning journey of an artist perfecting their craft, with ANNs progressively refining their renditions through continuous comparisons with source images. The implications of deepfake technology extend beyond the manipulation of faces; they encompass the broader landscape of AI-generated art, where the boundaries of human creativity intersect with artificial intelligence's prowess. In this context, this dissertation's exploration into human perception of AI-generated art takes on added significance. It not only delves into the perceptual dynamics between humans and AI-generated art but also underscores the transformative potential of AI, like deep learning, in reshaping the very nature of artistic creation and how we perceive it.

In the dynamic intersection of art and technology, the question of whether artificial intelligence (AI) can genuinely contribute to artistic creation has long sparked a contentious debate. Pioneers in this field, (*Audry & Ippolito, 2019*), hold divergent perspectives. Some, like Harold Cohen, hesitate to attribute creativity to their AI art-making counterparts, asserting that machines merely replicate pre-existing knowledge. Conversely, voices like Leonel Moura argue that AI-driven "Artbots" demonstrate a form of creativity by generating images based on emergent properties unpredicted by their human creators. (*Helmreich, 2007*) This intriguing dichotomy, rooted in the definition of artistic authorship, resonates closely with the central inquiry of this research endeavor. As the artistic landscape continues its transformation through technological innovations, understanding how viewers perceive and evaluate AI-generated art emerges as a pivotal exploration. By redirecting the focus from whether machines can be artists to the intricate dynamics between AI-generated and human-made art as perceived by viewers, this study navigates uncharted territories, shedding light on the evolving contours of artistic appreciation and creation.

Harold Cohen, a trailblazer in algorithmic artistry, embarked on his journey in 1968, well ahead of the art world's recognition of artificial intelligence as a viable creative force. His remarkable five-decade collaboration with the computer program AARON witnessed a profound evolution in both the program's code and the art it produced. Cohen's transformation from an initial role as a rule-setting programmer to a co-producer, adding his artistry as a colorist to AARON's designs, reflects the nuanced relationship between human and machine in the realm of artistic creation. Despite his deep acknowledgment of AARON's pivotal role in his artistic life, Cohen maintained a certain reluctance to fully endorse the notion of artificial intelligence as an independent artist. As psychologist Louise Sundararajan aptly observes, Cohen's perspective negates a simplistic view of creativity, emphasizing that it extends beyond mere divergent thinking or algorithmic symbol manipulation. Instead, Cohen's discourse paints a vivid picture of a unique human-machine partnership, highlighting the intricacies of this creative alliance. This nuanced exploration of artistry, as delineated by Cohen, holds profound relevance for the present research endeavor,

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where the evaluation of AI-generated art extends beyond the mere definition of creativity and delves into the intricate dynamics of human perception and preference in the evolving world of art (Cohen 2010).

The study conducted by Hong & Curran, 2019 offers valuable insights into the perception of AI-generated art and the impact of artist identity on art evaluation. Drawing on Schema theory (Schema theory is about how our brains categorize and interpret new information by fitting it into existing mental frameworks, or schemas. Schemas are like mental templates that help us understand and organize the world based on what we already know.) and the Computers Are Social Actors (CASA) theory (This theory suggests that individuals tend to apply social norms and behaviors when engaging with technology, viewing computers as more than just tools but as entities capable of social interactions.), the research meticulously controls the artist's identity, presenting participants with both AI-created and human-created artworks. Notably, the findings indicate that human-created and AI-created artworks were not regarded as equivalent in terms of artistic value. This observation underscores the complexity of the relationship between AI-generated art and human perception, aligning with the central theme of this research.

Building upon the groundwork, this dissertation extends the investigation into the realm of AI-generated art perception. It aims to explore whether participants prioritize AI-generated art as human-made, mirroring the methodology of the referenced study. By delving deeper into the nuances of artist identity and participants' schema regarding AI's creative abilities, this research endeavors to uncover the factors that contribute to the distinct evaluations of AI-generated art. Furthermore, it seeks to elucidate the implications of these findings for the art world and the broader discourse on the intersection of AI and human creativity. By addressing the previously identified gap in literature, this dissertation contributes to a more comprehensive understanding of how AI-generated art is perceived and evaluated by humans. (Hong & Curran, 2019)

Through this research, we delve into the fascinating intersection of human creativity and artificial intelligence (AI) in the realm of art. By exploring how people perceive AI-generated art compared to human-made art, The study aims to enrich our understanding of this dynamic relationship. Beyond the immediate implications for artists and the art world, our findings have broader significance. They can guide the development of AI systems, inform educational programs, and contribute to ethical discussions surrounding AI's role in creativity. Ultimately, this research has the potential to bridge gaps in current knowledge, fostering a more inclusive and innovative future for art and technology.

The choice of DALL·E for this research is rooted in its pivotal role within the AI research landscape. (Zhou & Nabus, 2023) DALL·E, introduced by OpenAI in January 2021, represents a significant milestone in AI development. This 12-billion parameter network excels at generating images from text descriptions, an area previously explored by various attempts but significantly propelled forward by DALL·E's capabilities. Notably, DALL·E leverages the CLIP (Contrastive Language-Image Pre-training) model, which itself has been trained on a vast dataset of 400 million image-text pairs collected from the internet. The CLIP model, employing contrastive learning, excels at understanding the relationships between images and their textual descriptions.

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The decision to employ DALL·E is also influenced by the broader AI research community's growing interest in text-to-image synthesis models, facilitated by open-source implementations like BigSleep and DeepDaze (Ge & Parikh, 2021). These implementations combine the power of the CLIP model with other generative models, enriching the generative latent space search. As such, the utilization of DALL·E aligns with the evolving trends in the AI art community, where advanced text-to-image synthesis models are gaining traction. In summary, DALL·E's integration into this research is not only a strategic choice but also reflective of its pivotal role in pushing the boundaries of AI-generated art and its resonance with the contemporary AI art landscape. (Cetinic & She, 2022)

In the landscape of AI-generated art, human perception emerges as a defining factor, mirroring the significance of perception found in the integration of healthcare technology in Saudi Arabia. Just as healthcare employees exhibited diverse attitudes and perceptions towards AI, art enthusiasts may harbor unique outlooks when engaging with AI-generated art. This connection underscores the need to unravel these perceptions, particularly as AI-generated art gains prominence. In both contexts, knowledge gaps and concerns about displacement surface, emphasizing the importance of understanding these preconceptions. Furthermore, akin to technicians in healthcare who experienced notable impacts due to the nature of their roles, certain groups of art enthusiasts may find their interactions with AI-generated art particularly influential. Therefore, delving into human perceptions and attitudes towards AI-generated art becomes a crucial research endeavor, akin to other studies examining AI integration in various domains. (Abdullah & Fakieh, 2019)

Building on this parallel, the study endeavors to contribute to the broader discourse on the role of human perception in the realm of AI-generated art. As AI-generated art continues its ascendancy, understanding how individuals perceive this form of creative expression becomes essential. By drawing connections with studies such as the one conducted in Saudi Arabia's healthcare sector, this research aims to illuminate the intricate tapestry of perceptions surrounding AI-generated art and its potential impact. In doing so, we not only deepen our understanding of human interactions with AI-driven technologies but also provide valuable insights into the evolving landscape of AI in the world of art. This research strives to bridge the gap between human perception and AI-generated art, painting a comprehensive picture of the art form's acceptance and influence in contemporary society.

Hypothesis

Hypothesis 1

Hypothesis (H1): Respondents' confidence levels in the ability of AI to understand and accurately interpret human emotions and intentions are significantly correlated with their attributions of image creation, with higher confidence levels leading to a greater likelihood of attributing AI-generated images to human creators.

Hypothesis 2

Hypothesis (H2): Respondents who strongly agree that AI advancements can lead to improved efficiency and productivity in different industries are significantly more likely to attribute the generated AI images to AI creators compared to respondents who do not strongly agree.

Hypothesis 3

Hypothesis (H3): Respondents who express a higher level of concern regarding the ethical implications and potential risks associated with the increasing use of AI in society are

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significantly more likely to attribute AI-generated images to human creators compared to respondents who express lower levels of concern.

Hypothesis 4

Hypothesis (H4): Respondents who express a higher level of trust in AI-based recommendations and decision-making in various aspects of their lives are significantly more likely to attribute AI-generated images to AI creators compared to respondents who express lower levels of trust

Hypothesis 5

Hypothesis (H5): There is a significant negative correlation between the complexity of an AI-generated image and participants' likelihood of attributing it to AI creation, indicating that more complex images are less likely to be attributed AI generated.

METHODOLOGY

Participants

A total of 124 participants, aged 18 years and above, were recruited for this study. The sample consisted of individuals from various gender identities and educational qualifications, ensuring diversity in the participant pool. Recruitment was conducted through an online survey platform, and participants voluntarily participated in the study. The mean age of the participants was 39, with 67 males and 56 females. The standard deviation for age is 11.12.

Material

AI generated images

DALL·E-Generated Images: The primary stimuli used in this study consisted of 20 images generated by the DALL·E AI model. These images were selected to assess participants' perceptions of AI-generated art. The stimuli were categorized into two groups:

The stimuli were created to encompass a diverse range of artistic content, complexity, and styles, providing a comprehensive basis for understanding participants' perceptions. See figure 1 for reference.

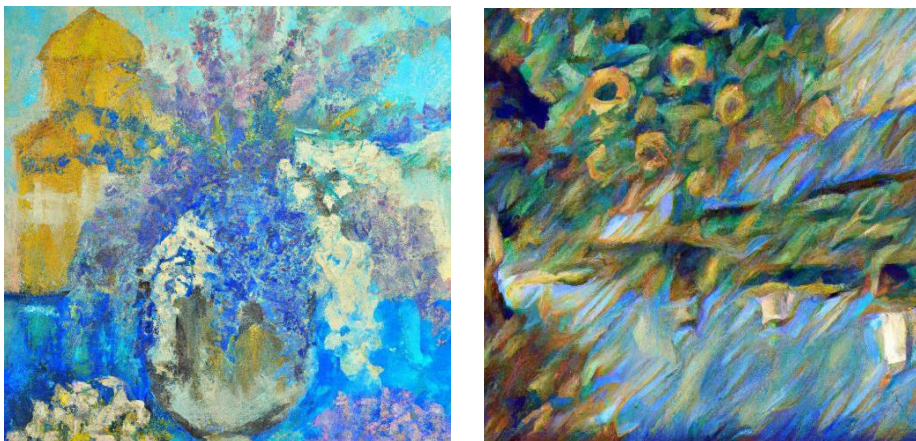


Figure 1

Left: Generated by DALL-E represent completely AI generated image, Right: represent Similar AI generated image.

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Likert Scale Questionnaire: Participants were presented with a structured Likert scale questionnaire. This was specifically designed for the current study, and designed to evaluate their attitudes and perceptions related to AI and AI-generated art. The questionnaire consisted of five items, each rated on a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." The Likert scale questions aimed to gauge participants' opinions on various aspects of AI and its role in art. A comprehensive list of Likert scale questions is available in the appendix section.

Data Collection Platform: The entire study was conducted online, with participants accessing the research materials via their personal computers. The data collection and experiment were facilitated using the online research platform, Testable. This platform allowed for the seamless presentation of stimuli, data collection, and participant responses. It also ensured the anonymity of participants and the secure storage of collected data.

Statistical Software: Data analysis for this study was performed using Jamovi, a powerful and user-friendly statistical software package. Jamovi offers a wide range of statistical tests and data visualization tools, making it well-suited for the comprehensive analysis of the data collected in this research.

Ethical Considerations: Ethical approval for this study was obtained from the Ethics Committee BREO. All participants provided informed consent before participating in the study and were informed of their rights to withdraw from the study at any point without penalty or prejudice.

Research Design

For this study, A quantitative approach was chosen to gather structured and numerical data, allowing for the rigorous analysis of participants' attitudes and perceptions. The experiment involved the presentation of 20 images, comprising 10 randomly generated AI images and 10 images resembling works by famous artists. The primary objective was to explore whether participants could rate the image if it is AI generated or human created art.

The experiment was divided into two parts: an Image Identification Task and a Likert-Scale Questionnaire. The Image Identification Task assessed participants' ability to distinguish between AI-generated and human-made art, while the Likert-Scale Questionnaire gathered insights into participants' perceptions of AI and its impact on society.

In this study, we investigate the perception of human and AI-generated art with a focus on three key variables. **The Independent Variable (IV)**, known as the 'Type of Image,' plays a pivotal role in our research design. This variable encompasses two levels: 'Generated AI Images' and 'Artist- Resemble AI Images.' These distinctions allow us to systematically manipulate the type of image presented to participants, enabling a nuanced examination of how different image origins influence perceptions.

Our primary **Dependent Variable (DV)**, labeled 'Participants' Attributions of Image Creation,' serves as a binary measure, denoting whether participants attribute an image as AI-generated (coded as 1) or human-made (coded as 0). This DV is pivotal in unraveling the core question of how individuals perceive art created by artificial intelligence in comparison to human artists. By meticulously defining and operationalizing these variables, this study seeks to shed light on the intricate dynamics of art perception in an age of technological. **The secondary Dependent variable** in this study is comprised of the responses provided by

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the participants. These responses encompass a wide array of perspectives, opinions, and attitudes towards various aspects related to artificial intelligence (AI).

Procedure & Ethics

Participant Recruitment: The recruitment process commenced with the dissemination of study invitations through diverse online channels, including social media platforms, online forums, and academic networks. Interested individuals were directed to the online research platform, Testable, where they were provided with detailed information about the study's objectives and procedures.

Informed Consent: Prior to their participation, all individuals were required to provide informed consent by acknowledging their understanding of the study's purpose, the voluntary nature of participation, confidentiality protocols, and their right to withdraw from the study at any point without repercussions. Only those who explicitly consented proceeded to the study materials.

Experimental Session: Participants accessed the study materials via their personal computers through the Testable platform. They were presented with a total of 20 images. For each image, participants were prompted to indicate whether they believed it was created by AI or by a human artist. Following the image assessment, participants completed a Likert scale questionnaire designed to gauge their attitudes and perceptions regarding AI and AI-generated art.

Data Analysis

The collected data were exported from the Testable platform and analyzed using the statistical software Jamovi. A series of statistical tests, including independent t-tests and correlation analysis, were conducted to examine relationships and patterns within the data.

Ethics

- **Institutional Review:** Ethical approval for this research study was obtained from the college's ethical body, BREO (Brunel Research Ethics Online). The study adhered to the ethical guidelines and principles outlined by BREO, ensuring the protection and well-being of participants.
- **Informed Consent:** Informed consent was a fundamental component of this study. All participants provided informed consent before participating, confirming their comprehension of the study's objectives, procedures, and the voluntary nature of their involvement.
- **Anonymity and Confidentiality:** Participants' identities and personal information were carefully protected throughout the study. Data collected through Testable was anonymized and stored securely to ensure confidentiality. Participants' responses were never connected to their personal identities.
- **Right to Withdraw:** Participants were informed of their unequivocal right to withdraw from the study at any point without facing any consequences or prejudice.
- **Debriefing:** At the conclusion of the study, participants were offered a debriefing statement outlining the study's purpose and providing additional information about the research.

RESULTS

Each hypothesis will be presented and tested in term in the following sub-sections. Every t-test is a Welche's test, in-order to avoid the assumptions of the student's test (adjusted degrees of freedom are stated). Where effect sizes are presented, these are always Cohen's (d).

For each of the following t-tests, the participants were split into groups based on the responses of the question in hand, e.g., for H1 participants were grouped depending on whether they responded saying say had of did not have confidence in "AI's ability to understand and interpret human emotions and intentions".

Hypothesis 1: The confidence participants have in AI's ability to understand and interpret human emotions and intentions was not significant with their likelihood of attributing AI-generated images to human creators, ($t(10.24) = 0.59$, $p = .566$, $d=0.23$ (small effect)).

Hypothesis 2: We assessed whether respondents who strongly agreed that AI advancements could improve efficiency and productivity in industries were more likely to attribute randomly generated AI images to AI creators than those who did not strongly agree. Using an independent samples t- test, we found no significant difference in attribution between the two groups ($t(0.54) = 10.33$, $p = .599$, $d=0.19$ (discernible impact))

Hypothesis 3: To explore the relationship between respondents' levels of concern regarding the ethical implications and potential risks associated with the increasing use of AI in society and their likelihood to attribute AI-generated images to human creators, an independent samples t-test analysis revealed that participants who expressed a higher level of concern were significantly more likely to attribute AI-generated images to human creators compared to those with lower levels of concern, ($t(23.48) = -3.19$, $p = .004$, $d=1.02$ (substantial effect)).

Hypothesis 4: We explored whether higher levels of trust in AI-based recommendations were associated with a greater likelihood of attributing AI-generated images to AI creators. Using an independent samples t-test, we found no significant difference in attribution between participants with higher trust ($t(-1.14) = 8.76$, $p = .285$, $d=0.55$ (small effect)).

Hypothesis 5: Using Pearson's correlation analysis, we found a significant negative correlation between image complexity and participants' likelihood of attributing images to AI creation, $r(124) = -0.60$, $p = 0.004$. The effect size for this correlation was large, indicating a substantial relationship between image complexity and attribution to AI, see figure 2. The images complexity was calculated using a MatLab script based on the image complexity/clutter super pixel segmentation algorithm presented Ming-Yu Liu research. (*Liu et al., 2011*)

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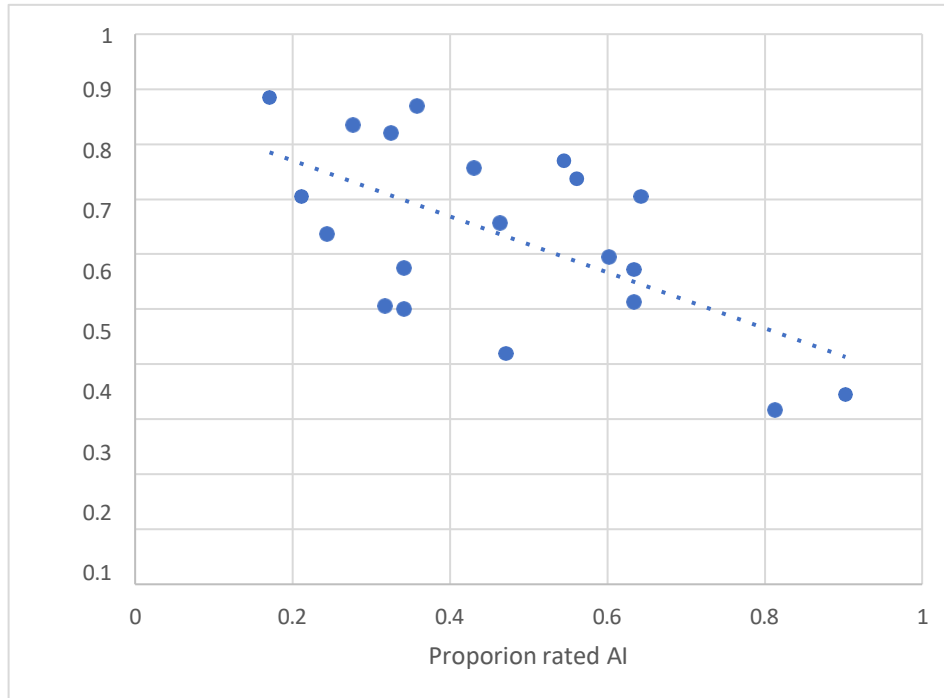


Figure 2. Showing the significant negative relationship between the image complexity and the proportion on times the image was rated has human. i.e., more complex images are more likely to be rated as human created. Note: within this scatter graph each point represents each of the 20 images.

DISCUSSION

Our journey through the landscape of AI-generated imagery has been a voyage of discovery, revealing intriguing facets of human cognition and trust dynamics within this evolving technological paradigm. The outcomes of our study have brought to the fore fascinating insights into the attribution of authorship to AI-created images. These revelations mark a significant step in deciphering the intricate relationship between humans and artificial intelligence, offering a fresh perspective that fills critical gaps in this burgeoning field of research. Our findings present a valuable foundation for future explorations, contributing to the evolving narrative of AI's impact on the way we perceive and engage with generated content.

Trust and Confidence in AI

In the study, we draw parallels with Hancock's 2011 research on trust/confidence, particularly in how individuals perceive AI-generated content like images. Just as trust is pivotal in HRI (Human Robot Interaction), we consider how it affects participants' attributions of authorship to AI-generated images (Hancock et al., 2011).

Our observations align with research on robot characteristics and performance-based factors, indicating that various image-related factors, such as quality, style, and realism of AI-generated images, may play a significant role in participants' attributions of authorship to AI (Hancock et al., 2011). The influence of environmental factors on trust development, as mentioned in the research by Hancock, also appears relevant in our research context, where the context of encountering AI-generated images significantly impacts attributions (Hancock et al., 2011). This interconnectedness of trust dynamics highlights the broader implications of our findings on human-AI interactions.

Impact of AI Advancements on Efficiency and Productivity in Industries

AI has the potential to revolutionize industries by automating tasks once bound by human limits. However, Hypothesis 2 showed that strong beliefs in AI's industrial impact did not significantly affect participants' attribution of AI-generated images, revealing a notable disparity between expectations and outcomes. This challenges the assumption that perceiving AI as an industrial significant change corresponds to attributing creative works to AI. Our research contributes to a nuanced understanding of AI perception, resonating with Dwivedi's 2019 paper, emphasizing the need for exploring psychological and contextual factors influencing attribution in the AI era. In summary, our results in Hypothesis 2 illuminate the intricate relationship between public perception and AI's actual impact, urging deeper discussions on AI's transformative role in various sectors (*Dwivedi et al., 2019*).

In delving into this intricacy, we uncover a fascinating dimension in the human-AI relationship. Our findings, encapsulated in Hypothesis 2, not only challenge preconceived notions but also urge a shift in how we understand AI's integration into our creative sphere. It is a glimpse into the evolving dynamics between humans and technology, an intersection where beliefs about AI's potential don't seamlessly translate to attributions of creative authorship. This calls for a paradigm shift, pushing us to unravel the underlying cognitive processes that steer these attributions. Moreover, it prompts businesses, policymakers, and researchers to navigate the AI landscape with a deeper comprehension of how perception molds interaction with this transformative technology. Thus, this study echoes a broader conversation, aligning with Dwivedi et al.'s insights from 2019, propelling us into a realm where AI's potential and our attributions converge and diverge in ways that demand thorough exploration (*Dwivedi et al., 2019*).

Furthermore, our research complements Dwivedi et al.'s study, providing empirical nuances to their theoretical framework. While paper (Dwivedi et al. 2019) laid the conceptual foundations, our outcomes offer real-world empirical insights into the dynamics between public perception and actual AI interactions. This synergy creates a richer tapestry of understanding, strengthening the framework for comprehending the transformative potential of AI, as discussed by *Dwivedi et al.*

Ethical Concerns and Image Attributions

In the context of Hypothesis 3, our research delved into the intricate relationship between individuals' levels of concern regarding the ethical ramifications of AI proliferation and their propensity to attribute AI-generated content to human creators. The results were striking, as they illuminated a substantial and statistically significant connection. Participants who expressed heightened ethical concerns were markedly more inclined to attribute AI-generated imagery to human originators, contrasting those who held fewer reservations. This discovery not only underscores the pervasive ethical dilemmas surrounding AI but also underscores the broader implications for AI integration in education and research.

These revelations resonate profoundly with the findings presented in the research paper by Kooli 2023, emphasizing the critical significance of ethical considerations in the adoption of AI and chatbots in the academic realm. As our study highlights, ethical awareness, comprehensive regulatory frameworks, and the cultivation of robust ethical values are imperative as AI systems and chatbots become integral components of education and research. The need for a proactive approach, one that fosters ethical consciousness and prioritizes responsible AI usage, becomes ever more evident as we navigate this new era of AI-enhanced learning and research (*Kooli, 2023*).

AI-Based Recommendations and Image Attributions

The study, we delved into the intricate relationship between trust in AI-based recommendations and the attribution of authorship to AI-generated images. The objective was to ascertain whether individuals with higher levels of trust in AI recommendations would be more inclined to attribute creative works to AI as opposed to human creators. The outcome, as revealed through rigorous statistical analysis, suggests a significant narrative. Surprisingly, our findings show no substantial difference in image attribution based on participants' level of trust in AI-based recommendations. The effect size, gauged by Cohen's d , was 0.55, signifying a moderate effect size. This result challenges a common assumption, bringing to light the nuanced dynamics of trust and perception. It suggests that trust in AI-based recommendations does not singularly dictate the attribution of creative works to AI, indicating the presence of additional influential factors in participants' decision-making processes. This discovery propels the discussion forward, prompting a deeper examination of the intricate interplay between trust, perception, and the evolving role of AI in creative domains. It beckons further exploration into the psychological and contextual elements that shape human interactions with AI-generated content, casting a critical light on the broader societal implications of technology-driven trust dynamics.

However, our study observed that trust in AI-based recommendations does not significantly influence the attribution of creative works to AI generated. There is another research done by (Ochmann *et al.*, 2021) This finding aligns with the "black box problem" (The lack of understanding or transparency in how AI systems arrive at their outputs or decisions based on the inputs they receive.) highlighted in the paper, where users face challenges in comprehending how AI recommendations are developed. Both results emphasize the importance of understanding users' attitudes and behaviors concerning AI technologies, shedding light on the complexity of human-AI interactions and the need for transparency and comprehension in AI systems, particularly when it comes to decision-making processes and creative attributions.

Understanding Image Complexity and AI Attribution

The research delved into the captivating realm of image complexity and its intriguing effect on participants' perceptions of authorship in AI-generated images. Through rigorous analysis employing Pearson's correlation, a compelling pattern emerged: a significant negative correlation between image complexity and participants' propensity to attribute these images to AI creation. This discovery suggests that as image complexity increases, participants leaned more towards perceiving the images as products of human creation rather than AI. The effect size, as underscored by the substantial correlation coefficient, was notably large, reinforcing the robustness and significance of this relationship.

These findings shed light on the interplay between image intricacy and our tendency to ascribe authorship, offering a glimpse into the cognitive processes that underlie our perception of intricate visual stimuli. Complex images, which boast more human-like features and intricacies, appear to be frequently attributed to human generated rather than AI. This outcome opens intriguing avenues for future exploration, aiming to unravel the cognitive mechanisms that govern this correlation and shed light on the perceptual dynamics influencing our assessment of AI-generated art.

Drawing a connection with the research conducted by Silva in 2011, H5 specifically investigates the correlation between image complexity and the attribution of authorship to AI. While the Silva's paper emphasizes the relationship between attentional behavior and

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image complexity, our hypothesis explores how image complexity affects participants' perceptions of whether an image was created by AI or a human. Both studies delve into the perception of images and their intricacies, albeit from different angles. (Silva et al., 2011) The perceptual complexity proposed in the referenced abstract could indeed tie into our hypothesis, suggesting that images perceived as more intricate due to attentional behavior might align with our finding that such complexity leads to a higher likelihood of attributing the image to human creation. This interconnectedness adds depth to our understanding of how various aspects of image processing and perception contribute to the attribution of authorship in the context of AI-generated images. (Silva et al., 2011)

Strength

These are some critical strengths of the conducted research.

- **Diverse Participant Pool:** The inclusion of 124 participants from various educational backgrounds enhances the generalizability of the study's findings. The diversity in educational qualifications provides a broader perspective on how individuals across different academic domains perceive and attribute AI-generated content.
- **Comprehensive Discussion and Interdisciplinary Approach:** The comprehensive discussion in this research effectively links the findings to existing literature, showcasing an interdisciplinary approach. This interconnection ensures that this study's results are in harmony with and further validate findings from other research, strengthening the credibility of the conclusions.
- **Exploration of Practical Implications:** The research goes beyond theoretical exploration by delving into practical implications, making the findings directly relevant to the real world. Specifically, it addresses concerns and trust associated with AI advancements, shedding light on how these factors affect human perception, thereby providing practical insights for a technologically evolving society.
- **Substantiating the Study's Contribution:** By substantiating the study's contribution to understanding human perception of AI-generated content, this research fills a critical gap in the current body of knowledge. It adds significant value by synthesizing the connection between human perception and AI, serving as a pivotal building block for future research in this domain.
- **Incorporating DALL.E's Potential:** This research stands as a pioneering effort in utilizing the potential of DALL.E, marking a significant advancement. Being the first study to harness DALL.E's capabilities in understanding human perception towards AI, it sets a precedent for future research to leverage this cutting-edge tool for deeper insights and analyses.

Limitations

These are some delimitations of the research.

- **Comprehensive Exploration of AI Perception, Yet Some Parameters Missed:** The study extensively investigated facets of AI perception, including trust, concern, and technological advancement. However, it is important to acknowledge that the research didn't account for potential influential factors such as anxiety levels and varied attitudes towards AI.
- **Limited Generational Insights due to Participant Age:** The study identified a limitation regarding generational perspectives due to the average age of the participants being 39 years. This age demographic predominantly represents a

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specific generation, potentially missing the perspectives and attitudes of younger or older generations.

- **Sole Focus on Visual Content:** The study primarily concentrated on perceptions related to AI-generated images, potentially limiting a comprehensive understanding of AI's broader impact. By exclusively examining image perception, the research may have overlooked insights and attributions related to other AI-generated content, such as music, text, or videos. To provide a more holistic view of AI perception, future studies should consider including a diverse range of AI-generated stimuli beyond images, as different content types may elicit distinct attributions and attitudes. This expansion would contribute to a more nuanced understanding of human interactions with various AI-generated forms of creativity, aligning with the multifaceted nature of AI's influence on society.
- **Online Environment Limitation:** The study's confinement to online surveys may not accurately mirror real-world AI interactions due to potential issues such as background noise, distractions, and diverse environmental factors.

Future Studies

Future research should delve into demographic factors such as age, education, and AI familiarity to understand their role in shaping perceptions of AI-generated content. Exploring how attitudes change over time as AI technology evolves is crucial. Expanding cross-culturally and examining various AI-generated content types, such as music and videos, can provide a comprehensive view. Longitudinal studies can shed light on the evolving nature of perceptions in response to technological advancements. Additionally, investigating potential connections between AI image ratings, excessive paranoia, and false beliefs in diverse socio-economic contexts is a promising avenue for future exploration.

Real world implications

The key findings of this study hold significant real-world implications at the intersection of psychology, AI perception, and future AI development. Understanding how trust, ethical concerns, beliefs about AI's industrial impact, and image complexity influence attributions to AI-generated content is vital. In practical terms, this research informs AI developers and policymakers to design transparent AI systems that resonate with ethical values, building trust and mitigating biases. Moreover, industries expecting transformative AI impacts need to educate the public to align expectations with reality. For the evolving AI landscape, acknowledging the nuanced perceptual dynamics revealed here is crucial, guiding the creation of AI-generated content that aligns with human attributions, contributing to a seamless human-AI interaction.

CONCLUSION

In this dissertation, we delve into the intricate relationship between human perception and artificial intelligence (AI), focusing on trust, ethical concerns, beliefs about AI's industrial impact, and image complexity in the context of AI-generated content. These findings bear substantial real-world implications. We are on the brink of an AI revolution, experiencing unprecedented technological advancements with the potential to transform various sectors. However, to fully utilize AI's capabilities, understanding its outcomes and interconnections is paramount. Without this comprehension, we risk underutilizing the immense potential AI brings. This research sheds light on the nuanced perceptual dynamics between humans and AI, providing essential insights for AI developers, policymakers, and industries seeking to maximize AI's transformative potential. It lays the foundation for creating AI-generated

content aligned with human attributions, fostering a seamless human-AI interaction in this evolving AI revolution.

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Conflict of Interest

The author(s) declared no conflict of interest.

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