



Can ChatGPT be an author? Generative AI creative writing assistance and perceptions of authorship, creatorship, responsibility, and disclosure

Paul Formosa¹ · Sarah Bankins² · Rita Matulionyte³ · Omid Ghasemi⁴

Received: 22 March 2024 / Accepted: 16 September 2024 / Published online: 27 September 2024
© The Author(s) 2024

Abstract

The increasing use of Generative AI raises many ethical, philosophical, and legal issues. A key issue here is uncertainties about how different degrees of Generative AI assistance in the production of text impacts assessments of the human authorship of that text. To explore this issue, we developed an experimental mixed methods survey study ($N = 602$) asking participants to reflect on a scenario of a human author receiving assistance to write a short novel as part of a 3 (*high, medium, or low* degrees of assistance) X 2 (*human or AI* assistant) factorial design. We found that, for a human author, the *degree* of assistance they receive matters for our assessments of their level of authorship, creatorship, and responsibility, but not *what or who* rendered that assistance, although it was more important to disclose human rather than AI assistance. However, in our assessments of the assisting agent, human assistants were viewed as warranting higher rates of authorship, creatorship, and responsibility, compared to AI assistants rendering the same level of support. These results help us to better understand emerging norms around collaborative human-AI generated text, with implications for other types of collaborative content creation.

Keywords Generative AI · ChatGPT · Authorship · Creatorship · Responsibility · Disclosure

1 Introduction

While Generative Artificial Intelligence (GenAI) tools, such as ChatGPT, Stable Diffusion, and GitHub Copilot, have only recently been released for widespread public use, their popularity has already exceeded expectations. For example, after its public release, ChatGPT, a text-to-text AI, set a record for the fastest growing consumer user base (Hu and Hu 2023). GenAI refers to artificial intelligence systems that can generate from inputs a range of high-quality outputs in various formats, including images, text, computer code,

and music (Epstein et al. 2023). Various GenAI apps have already been used to write novels (Mogg 2023), generate images that have won art competitions (Hurler 2023), and are set to transform work roles as diverse as sales and marketing to software development (McKinsey 2023). However, these GenAI tools raise many ethical, philosophical, and legal issues (Dehouche 2021). Several of the most important issues raised by humans using AI tools, such as ChatGPT, to help them to generate text are: who or what should be listed as an *author* of the text; who or what can count as having contributed to the *creation* of the text (Yanisky-Ravid 2017); who or what is *responsible* for the contents of the text (Tu 2021); and when, and in what form, *disclosure* of that assistance is required (Jenkins and Lin 2023). Currently, the accelerating use of GenAI tools is outstripping comprehensive answers to these questions, and these questions are becoming more practically and legally important. Further, the norms around GenAI assistance in text production remain emergent and poorly understood; however, we can draw on broader, but contextually similar, norms around human assistance in text creation to develop relevant insights (Nissenbaum 2011). To examine these issues, we ask: *How*

✉ Paul Formosa
paul.formosa@mq.edu.au

¹ Department of Philosophy, Macquarie University, Sydney, Australia

² Department of Management, Macquarie University, Sydney, Australia

³ School of Law, Macquarie University, Sydney, Australia

⁴ Institute for Climate Risk and Response, University of New South Wales, Sydney, Australia

does the degree of assistance, and whether that assistance is received from a human or an AI, impact assessments of the authorship, creatorship, and responsibility for a text, and the importance of disclosing that assistance?

To address this question, we developed an experimental mixed methods survey study ($N=602$) asking participants to reflect on a scenario involving a human author receiving different degrees of assistance (high, medium, or low) from either a human or an AI assistant. We found that, for a human author, the degree of assistance matters for our assessments of their level of authorship, creatorship, and responsibility, but not *what or who* rendered that assistance except that it was more important to disclose human rather than AI assistance. However, when people evaluated the assisting agent, human assistants were viewed as warranting higher rates of authorship, creatorship, and responsibility compared to AI assistants rendering the same level of support. These results help us to better understand emerging community views and norms around combined human-AI generated text, while providing a starting point for examining these issues in other forms of AI-assisted content generation.

2 Literature review: human–AI collaboration and implications for authorship

Large Language Models (LLMs), which drive applications like ChatGPT, are a form of GenAI that can produce plausible sounding texts in various formats from user-generated prompts (Lund et al. 2023). GenAI is increasingly used in diverse fields to create or co-create content, especially in the creative industries. For example, an artist won a photography competition with a human-AI “co-creation” that was “the result of a complex interplay of prompt engineering, inpainting and outpainting” (Hurler 2023). In literature, there is increasing use of ChatGPT to produce novels, swamping some publishers with AI-generated content (Mogg 2023). GenAI is also being used in the creation of movie and television scripts and in various aspects of music creation and production, leading to controversies over whether work created exclusively by, or in collaboration with, AI should be eligible for creative awards (Edwards 2023). Such controversies link to our motivations for this study: how should we think about the authorship of co-created human and AI outputs? This is a significant question to explore as an accelerating amount of creative, academic, media, and work outputs are the result of an intermixing of human and AI contributions. This makes issues, such as the extent to which a person should be regarded as the author and creator of that output and responsible for its content, as well as whether disclosure of assistance is required, of acute practical importance. This has implications for a range of issues, from who (or what) gets listed as authors on the title page of a novel or

academic paper, to how much we blame or praise humans for their outputs co-created with AI, and to what are the nature of emergent acknowledgement practices that document AI assistance. Understanding public perceptions regarding who is an author in AI-assisted creation contexts is also important for ongoing policy and legal discussions, since only authors are entitled to exclusive rights and remunerations available under copyright laws.

In an academic context, there is ongoing debate about whether ChatGPT should be used to help write, and so be listed as an author on, scholarly outputs. Several published papers already list ChatGPT as one of the authors (Stokel-Walker 2023), prompting publishers to clarify that ChatGPT, even if it makes significant scholarly contributions to an article, cannot be listed as an author as it cannot take responsibility for the content it produces or consent to the dissemination of its creations (Crawford et al. 2023; Lee 2023; Van Gelder 2023). A recent journal editorial explaining the removal of ChatGPT as an author from O’Connor and ChatGPT (2023) argued for the importance of transparency in how LLMs such as ChatGPT are used in the writing process (Siegerink et al. 2023).

Three main views on this question have emerged in the academic literature: (1) GenAI tools *can* be listed as an author under some circumstances (Jenkins and Lin 2023); (2) GenAI tools *cannot* be listed as authors under any circumstances (Hosseini Rasmussen et al. 2023); and (3) GenAI tools *must* be listed as authors if certain conditions are met (Miller 2023). Exemplifying the first view, Jenkins and Lin (2023) challenge the claim that AI cannot count as an author by arguing that, in the case of posthumous works by humans, we have a text generated by someone who both cannot be held responsible for its contents and cannot consent to disseminate the work, since they are dead. But, even so, we can still have posthumous authors, so why not AI authors too? Instead of a blanket rejection of the possibility of AI authorship, Jenkins and Lin (2023) argue that “continuity” (how much of the AI generated text remains in the final product) and “creditworthiness” (would this degree of contribution from a human typically amount to authorship?) should determine the discipline-specific form of “credit” an AI should warrant. The degree of both AI assistance and user input are also relevant to assessments of continuity, such as cases where “the (user) input provided is very limited (e.g., ‘write an essay on this topic’)” (Lund et al. 2023). Given the complexity of these authorship issues, others argue that we may need to revise our “binary definitions of authorship ... in which someone is either an author, or not” (van Dis et al. 2023).

In contrast, and exemplifying the second view, others argue that “because LLMs do not have free will”, they cannot be held responsible for what they do, and thus it is always inappropriate to include ChatGPT as a co-author or

to even “acknowledge” it, but it is still important to disclose interactions with LLMs (Hosseini Resnik et al. 2023). Legal scholarship that is grappling with these questions largely sits within this second view, on the basis that only humans can be legally recognised as authors. Under current laws it is widely held that, in the case of AI-generated work with no or only very limited human input, no one would legally qualify as an author of these works. This is because a human cannot qualify as an author in this case since they do not contribute to the creative expression of the work, while an AI cannot qualify as an author since the law requires authors to be human (White and Matulionyte 2020). In contrast, in the case of AI-assisted works where a human makes more substantive contributions, that human alone would be legally recognised as an author, at least regarding their contributions. From a normative perspective, legal commentators do not agree on whether copyright law should award protections to AI-generated and AI-assisted works or, if they did, who should be the author for the purposes of copyright law. For example, regarding work that is autonomously generated by AI, some legal scholars argue that AI should not be recognized as an author (Ginsburg and Budiardjo 2019), and that AI-generated work should not be protected under copyright at all (Sun 2022), but that protection should be awarded to work where AI is used as a tool and humans exercise sufficient creative effort in the development of that work. Gervais (2020) suggests a model to distinguish between authorless AI-generated works and protectable AI-assisted works where the human is the only legally recognized author. Rallabhandi (2023) suggests that the human or corporate creators of AI models should be recognized as authors of the works generated with the help of those AI models. In contrast, Yanisky-Ravid (2017) suggests that AI users should be the ones vested with authorship, ownership, and accountability for AI-generated outputs. There is also emerging literature on the responsibility for content generated by AI, especially regarding deep fakes (Schapiro 2020) and cases where AI use violates human rights or leads to the infringement of copyright (Land and Aronson 2020). Overall, from a legal perspective, since (and as long as) AI does not have a legal personality, it cannot be held to be legally accountable for the content it generates, and it will always be an AI developer or user (or both) who is held legally accountable for its outputs.

The third view takes a stronger form than the first view, moving beyond suggesting that AI *can* be an author, to arguing that in some circumstances it *must* be when certain thresholds are met. Exemplifying this third view, Miller (2023) argues that many publication ethics codes *require* authorship for all participants involved in drafting, revising, or making substantial scientific contributions to a text, which makes it potentially unethical *not* to include an LLM as an author where it meets these standards. Likewise, Polonsky

and Rotman (2023) argue that ChatGPT can sometimes meet the four conditions specified in the International Committee of Medical Journal Editors (ICMJE) recommendations for authorship, namely making a “substantial contribution”, “drafting” or “revising” the work, giving “final approval” of the work, and agreeing to “be accountable” for the work (Polonsky and Rotman 2023).

In practice, there is evidence of lagging organisational standards regarding disclosure of Generative AI in text creation, despite its growing use. For example, a study exploring algorithmic journalism shows how traditional views of humans as news authors remain strongly held, leading to discrepancies between the use of AI in generating news content, and the adaptation of crediting policies, such as the use of disclosure, by-lines, and attribution, to reflect its use (Montal and Reich 2017). More broadly, GenAI has also been compared to the use of human ghostwriters (Nowak-Gruca 2022) who are commonly used for celebrity memoirs (Knapp and Hulbert 2017). Comparing the nascent informational and authorship norms around GenAI use with more established norms in contextually-similar cases, such as human ghostwriting, can help us to understand and evaluate these emerging norms (Nissenbaum 2011). An empirical study of the ethics of ghostwriting found, for example, that 85% of participants did not think it was unethical for the President of the United States to use a ghost speechwriter, but they were more ambivalent about whether the President should disclose that assistance (Riley and Brown 1996).

In sum, there is no consensus on the treatment of GenAI as an author for the text it may autonomously or collaboratively (with a human) generate. However, across the first and third views at least, there is some coalescence around the idea that GenAI *could* be an author and that a key potential threshold for AI authorship is the *degree* of assistance it provides to a human creator. Therefore, we argue that the more help that a human gets to generate content (i.e., higher AI continuity whereby much of the AI generated text remains in the final output), the less that human will be perceived as the author and creator of, and be responsible for, that content, and the greater their obligation to disclose that assistance. This leads to our first hypothesis:

H1: Receiving higher degrees of assistance will lead to significantly lower ratings for authorship, creatorship, and responsibility for the content produced, and a higher rating for the need to disclose that assistance.

However, *who or what* provides the assistance will also matter. It is established that people view human and algorithmic labour differently (Bankins et al. 2024), including when doing the same task (Bankins et al. 2022). There is emerging empirical work that helps to uncover these views regarding AI authorship. For example, news stories attributed solely to a human were perceived as more credible than

news authored solely by an algorithm or by a human-assisted algorithm (Jia and Liu 2021). Several studies have also shown that AI-made art, music, and other creative outputs are considered less pleasant and less morally authentic (Jago, 2019) than human-made works, although not all studies demonstrate this negative bias (Chiarella et al. 2022). Therefore, we expect there to be differences between a human or a Generative AI (i.e., ChatGPT) providing that assistance. Thus, our second hypothesis is:

H2: There will be significant differences between receiving assistance from a Generative AI (e.g., ChatGPT) compared to receiving that assistance from a human in terms of ratings for authorship, creatorship, responsibility for the content produced, and the need to disclose that assistance.

3 Methods

3.1 Research design

Since we explore the influence of two factors, degree of assistance and the agent assisting, we employed an experimental survey method (Wallander 2009). Our participants were asked to reflect on a scenario involving the construction of a creative text as part of a 3 (*high, medium, or low* level of assistance) X 2 (*human or AI* assistant) factorial design. This gave us six experimental vignettes (see Table 1, with completions per cell shown).

3.2 Materials

The text of all six vignettes were identical, except where we varied the degree of assistance and the agent assisting. To make the degree of assistance clear, a “high” level of assistance equated to *all* the text being written by the assistant, a “medium” level of assistance equated to *half* the text being written by the assistant, and a “low” level of assistance equated to *one page* out of 50 being written by the assistant.

Table 1 Description of the 6 vignettes

Group name	Scenario description	No. of completions
Hu-H	Human-high assistance level	101
Hu-M	Human-medium assistance level	101
Hu-L	Human-low assistance level	100
AI-H	AI-high assistance level	100
AI-M	AI-medium assistance level	100
AI-L	AI-low assistance level	100

An example vignette is given below, with manipulations in square brackets:

Lee is a published novelist. Lee is commissioned by a publisher to write a new fictional short story that needs to be about 50 pages. Lee is short on time, with a publisher’s deadline to meet, so they decide to get some help. Lee gets [ChatGPT, a generative AI system/a human assistant], to write [*the novel in full/half the novel/the opening page of the novel*] for them after giving the [AI/assistant] a few brief prompts. Lee makes a few very minor changes to [ChatGPT’s outputted/the assistant’s] text, [*but doesn’t rewrite the novel themselves any further/and then writes the other half of the novel in full themselves/and then writes the rest of the novel in full themselves*]. In the end, Lee uses about [*50 pages/25 pages/1 page*] of lightly-edited text written by the [AI/human assistant] [*/and about 25 pages of text written by themselves/and about 49 pages of text written by themselves*], for their novel. Once the novel is completed, Lee sends it to the publisher. The publisher is very pleased with the novel and publishes it as is. Lee takes full credit for the novel as sole author and does not at all acknowledge to their publisher or readers that they received any help in creating their novel.

We chose a creative writing context to limit concerns about the potential inaccuracy of AI content, which could impact evaluations of its use in non-fiction text creation, and because it represents a common use case for ChatGPT.

3.3 Procedure

We obtained participants through Prolific, a widely used online data service platform that has been shown to provide better data quality than competing means of data collection, such as MTurk and undergraduate student samples (Douglas et al. 2023). We received ethics approval from our University’s Human Research Ethics Committee (ref. no. 520231583852668). Our study was pre-registered with OSF (<https://osf.io/ymvd4>). Informed consent was given by participants for this study. Each participant was randomly assigned one vignette from our pool of six vignettes in a between-subjects design. After reading their assigned vignette, participants completed the measures and attention check detailed below.

3.4 Sample

We had 623 participants undertake our study. In line with our pre-registration, we removed participants who failed our attention check (21 participants), leaving 602 valid participants. The mean age of our sample was 33.3 (SD = 11.3), with 269 female, 328 male, and 5 non-binary respondents.

Most of our sample had a Bachelor degree as their highest level of education (366), followed by Primary and Secondary school (163), and a Postgraduate degree (100).

3.5 Measures

There is substantial literature on what constitutes authorship (Love 2002), how researchers approach assigning authorship across collaborators (Nylenna et al. 2014), and the specific criteria used to determine authorship (Kakodkar and Bhonde 2022). However, we could not identify established measures that specifically capture people's views of our key outcome variables. Therefore, we created targeted, succinct, and understandable questions to capture lay persons' perceptions of creatorship, authorship, responsibility, and disclosure across our scenarios, as detailed below.

The following measures were completed by participants after reading their assigned scenario. All four dependent variables used a scale ranging from 1 "Strongly disagree" to 7 "Strongly agree". Participants only received questions about the assistant in their assigned scenario (either "ChatGPT" or the "human assistant"). "Lee" is the name of the human novelist in the scenario.

Creatorship was measured with a two Likert-scale item: "Lee created the novel"; "[ChatGPT/the human assistant] created the novel".

Authorship was measured with a two Likert-scale item: "Lee should be listed as an author of the novel"; "[ChatGPT/the human assistant] should be listed as an author of the novel".

Responsibility was measured with a two Likert-scale item: "Lee is responsible or accountable for the contents of the novel"; "[ChatGPT/the human assistant] is responsible or accountable for the contents of the novel".

Disclosure was measured with a single Likert-scale item: "Lee should publicly acknowledge to their publisher and readers their use of [ChatGPT/a human assistant] to help in the writing of the novel". Note, there is only a single item for *Disclosure* as it did not make sense to ask whether ChatGPT/the human assistant should publicly acknowledge their provision of assistance.

Open-ended Question: Participants were also given the opportunity to provide qualitative data by answering the following question: "Can you expand on or explain your answers to the previous questions?".

Demographics captured were age, gender, and highest level of education.

GenAI Experience: As a participant's previous experience with a technology can influence their views (Formosa et al. 2023), we controlled for this factor. We captured participants' experience with ChatGPT by adapting a simplified version of the Game Technology Familiarity (GTF) scale (McEwan et al. 2020) consisting of the following single

Likert-scale item ranging from 0 = "Never used", 1 = "Very little experience", to 7 = "Very experienced". The item is: "How experienced are you with using ChatGPT (or other Generative AI chatbots)?".

3.6 Analytical strategies

We employed a series of Analysis of Variance (ANOVA) models to analyse our data. Since participants responded to each outcome measure once for Lee and once for the assistant, we conducted separate analyses for each query. Each model incorporated one of our four measures as the dependent variable, with the *assistant* (human vs. AI), level of *assistance* (low vs. medium vs. high), and their interaction as predictors. While our preregistration initially specified a linear mixed model, due to the absence of by-subject and by-item repetition (each subject rated one unique item in each condition), no random-effect structure was included in the models. To validate our analytical approach, we re-analysed the models by incorporating participants' experience with ChatGPT as a covariate. The findings largely mirrored the main analysis, unless stated otherwise (refer to supplementary materials for full results). While not part of our preregistration, we also re-analysed (at the suggestion of a reviewer) our models with age as a covariate. In this case, the findings from the main analysis remain unchanged, indicating that age was not a significant moderator in any of the models (refer to supplementary materials for full results). Additionally, we conducted a series of ordinal Bayesian regressions to account for the ordered nature of our dependent variables, yielding results consistent with our frequentist approach presented here for clarity (see the supplementary materials for the results of the Bayesian models). The anonymous data and analysis scripts are accessible through OSF (<https://osf.io/wgd7y/>). We analysed our qualitative data by thematically coding responses to our open-ended question. We adopted an inductive approach, allowing themes to emerge from the data (Braun and Clarke 2006). Investigator triangulation (Carter et al. 2014) was achieved by two researchers coding all of the qualitative data together and resolving any coding disagreements through discussion.

4 Results

4.1 Descriptive statistics

Participants' ratings of authorship, creatorship, disclosure, and responsibility for different conditions of assistant (AI vs. human) and assistance (low vs. medium vs. high) are summarised in Table 2. As shown, participants rated Lee's authorship, creatorship, and responsibility lower, and Lee's need to disclose higher, when Lee received higher levels of

Table 2 Mean (standard deviation) of authorship, creatorship, disclosure, and responsibility ratings across conditions of the study

Query	Outcome	Assistant	Assistance		
			Low	Medium	High
Lee	Authorship	AI	6.09 (1.28)	5.55 (1.29)	4.35 (1.72)
		Human	5.89 (1.25)	5.5 (1.14)	3.98 (1.61)
	Creatorship	AI	5.59 (1.52)	4.82 (1.42)	3.25 (1.63)
		Human	5.44 (1.38)	4.7 (1.34)	2.95 (1.64)
	Disclosure	AI	4.49 (1.93)	5.31 (1.8)	5.63 (1.45)
		Human	5.22 (1.55)	5.6 (1.46)	5.93 (1.28)
	Responsibility	AI	5.94 (1.22)	5.5 (1.4)	4.97 (1.82)
		Human	6.05 (1.03)	5.39 (1.36)	4.73 (1.77)
Assistant	Authorship	AI	3.25 (1.91)	4.31 (1.78)	4.66 (1.76)
		Human	3.69 (1.81)	5.11 (1.59)	5.64 (1.35)
	Creatorship	AI	2.42 (1.57)	3.95 (1.58)	5.45 (1.36)
		Human	3.1 (1.64)	4.14 (1.46)	5.8 (1.25)
	Responsibility	AI	3.11 (1.76)	3.86 (1.79)	4.29 (1.96)
		Human	3.14 (1.75)	4.64 (1.37)	5.07 (1.7)

assistance, regardless of whether the assistant was a human or an AI. Participants rated the assistant's authorship, creatorship, and responsibility higher when the assistant provided higher levels of assistance.

4.2 Inferential analyses

Initially, we present the inferential analysis for each of the dependent variable measures regarding Lee, followed by the analyses concerning the AI or human assistant.

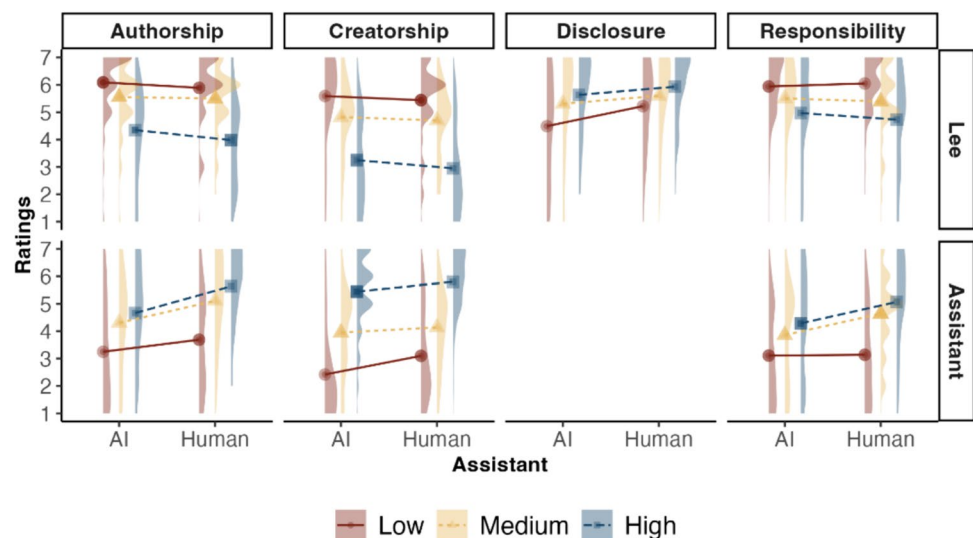
4.2.1 Query = Lee

Authorship. The results revealed a main effect of assistance, $F(2, 596) = 92.29, p < 0.001, \eta_p^2 = 0.24$. As shown in the top panel of Fig. 1, participants rated higher authorship for a low level of assistance compared to medium and high levels of assistance ($ps < 0.002$), and medium compared to high ($p < 0.001$). The main effect of the assistant was non-significant, indicating similar authorship ratings regardless of whether the assistant is a human or ChatGPT ($p = 0.07$). The interaction between these two predictors was non-significant ($p = 0.54$).

Creatorship. As in the previous model, we found a significant main effect of assistance, $F(2, 596) = 137.80, p < 0.001, \eta_p^2 = 0.32$. As depicted in the top row of Fig. 1, participants rated higher creatorship for a low level of assistance compared to medium and high levels of assistance ($ps < 0.001$), and also for the medium level of assistance compared to the high level ($p < 0.001$). The main effect of assistant and the interaction terms were again non-significant ($ps < 0.12$).

Disclosure. The model revealed a main effect of assistance, $F(2, 596) = 17.38, p < 0.001, \eta_p^2 = 0.06$. Participants indicated that Lee should acknowledge their use of the

Fig. 1 The ratings for authorship, creatorship, disclosure, and responsibility across query, assistance, and assistant conditions. Solid geometrical shapes denote the mean for each condition, while the surrounding plots portray the distributions of the raw data



assistant more when the level of assistance was high compared to medium ($p=0.04$) or low ($p<0.001$), and when the level of assistance was medium compared to low ($p<0.001$). In contrast to the previous models, the results revealed a main effect of assistant, $F(1, 596)=11.43$, $p<0.001$, $\eta_p^2=0.02$. Participants suggested that Lee should acknowledge the use of assistance more when the assistant was a human (Mean = 5.58) compared to ChatGPT (Mean = 5.14). There was no significant interaction between assistance and assistant ($p=0.29$).

Responsibility. The results revealed a main effect of assistance, $F(2, 596)=30.85$, $p<0.001$, $\eta_p^2=0.09$. Participants tended to attribute greater responsibility to Lee when the level of assistance was low compared to medium or high ($ps<0.001$), and when the level of assistance was medium compared to high ($p<0.001$). The main effect of the assistant was non-significant, indicating similar responsibility ratings regardless of whether the assistant was a human or ChatGPT ($p=0.49$). The interaction term was also non-significant ($p=0.48$).

4.2.2 Query = assistant

We now present participants' responses to questions regarding whether the assistant, rather than Lee, should be listed as an author, has created the novel, and is responsible for its contents. No questions regarding disclosure were asked. As depicted in Fig. 1, the pattern of results is reversed for the bottom row of the figure (query = assistant) compared to the top row (query = Lee). We now analyse each of the outcome measures.

Authorship. A main effect of assistance was found, $F(2, 596)=51.93$, $p<0.001$, $\eta_p^2=0.15$, which indicates higher authorship ratings for the assistant when the level of assistance was high compared to medium ($p=0.009$) and low ($p<0.001$), and medium compared to low ($p<0.001$). We also found a main effect of assistant, $F(1, 596)=28.11$, $p<0.001$, $\eta_p^2=0.05$. This means that participants tend to rate authorship as higher for the human assistant (Mean = 4.81) compared to ChatGPT (Mean = 4.07). The interaction term was non-significant ($p=0.28$).

Creatorship. The results revealed main effects of assistance, $F(2, 596)=187.13$, $p<0.001$, $\eta_p^2=0.39$, and assistant, $F(1, 596)=11.37$, $p<0.001$, $\eta_p^2=0.02$. Participants provided higher ratings for the assistant as the creator when the assistance level was high compared to medium and low, and when the assistance was medium compared to low ($ps<0.001$). Moreover, participants rated the assistant higher as a creator when it was a human (Mean = 4.35) compared to ChatGPT (Mean = 3.94). No significant interaction effect was found between assistance and assistant.

Responsibility. The results revealed main effects of assistance, $F(2, 596)=43.11$, $p<0.001$, $\eta_p^2=0.13$, and

assistant, $F(1, 596)=14.15$, $p<0.001$, $\eta_p^2=0.02$. Participants rated the assistant as more responsible when the assistance level was high compared to medium ($p=0.013$) and low ($p<0.001$), and when the assistance was medium compared to low ($p<0.001$). Moreover, participants rated the assistant to be more responsible for the content of the novel when it was a human (Mean = 4.28) compared to ChatGPT (Mean = 3.75). The results also revealed a marginally significant interaction between assistance and assistant, $F(2, 596)=3.14$, $p=0.044$, $\eta_p^2=0.01$. As the bottom panel of Fig. 1 shows, the effect of assistance was more pronounced for the human assistant than the ChatGPT assistant condition. However, it is important to note that the interaction term became non-significant in the model that controlled for experience using AI as a covariate (see supplementary materials).

4.3 Open-ended question: qualitative results

The qualitative open-ended comments clustered under six major themes, comprised of minor emergent themes, and reflect whether comments were positive, negative, or mixed about either Lee or the Assistant being a responsible and creditworthy author/creator. Table 3 lists descriptions, illustrative quotations, and relative frequency for all themes. Major theme frequencies are cumulative of the minor themes that comprise them. Only themes with at least 10 or more mentions in total are listed here. Passages which mention both Lee and the Assistant were dual coded under relevant themes for both Lee and the Assistant.

Overall, the most common themes raised about Lee (> 5%) were, positively, that they should be considered an author or creator of the text, they deserve credit for their work, and they are responsible for the work and its content; negatively, that they should have disclosed the assistance they received; and mixed, in terms of their use of prompt engineering. The mention of Lee using prompt engineering was classified as mixed as this was commonly used to indicate that Lee did indeed do something, but the degree of their contribution was ambiguous as someone or something else was using that prompt to generate content. In terms of the Assistant, the only common themes (> 5%) were positive and mirrored the top two positive themes for Lee, namely that the Assistant should be considered as an author or creator of the text, and they deserve credit for their work.

We can gain a more detailed understanding of the qualitative data by comparing the frequency of themes when varying either the *type of assistant* (AI vs. human assistant) or the *degree of assistance* (high vs. medium vs. low), as shown in Table 4. When comparing the type of assistant, the frequency of positive and negative themes about Lee are quite similar regardless of the type of assistant used (all differences less than 2%), whereas we see some larger shifts

Table 3 Major and minor themes from the qualitative data

Theme name: description	Illustrative quotes	Theme freq
Positive themes about Lee	Themes in favour of Lee as a responsible, creditworthy author	32%
Lee is the creator or author: <i>Lee is the author, the creator, made significant contributions to the work, etc</i>	“Lee should be listed as an author because he gave ChatGPT the idea and few points on how to write the novel” [AI-H] “Lee is the author. Sure, he used one page written by the assistant, but that’s one page versus 49” [Hu-L]	16.6%
Lee deserves credit: <i>Lee deserves full or partial credit</i>	“they [Lee] should take most of the credit because they gave the prompts to the AI” [AI-M] “Lee has to have some credit as he came up with the prompts” [Hu-H]	7.5%
Lee is responsible: <i>Lee is fully or partially responsible; Lee shares some responsibility or accountability</i>	“AI is partly responsible for the editing of the novel[,] but Lee is fully responsible” [AI-H] “Lee is the owner of the publication and should take full responsibility for the content written in it” [Hu-L]	5.9%
Lee doesn’t need to disclose help: <i>Lee does not need to acknowledge or disclose their use of an assistant</i>	“no matter how much it [AI] assisted[,] it is still Lee’s work and he does not need to acknowledge AI input” [AI-L] “The assistant only contributed a very small part of the novel... This does not merit an acknowledgement” [Hu-L]	2%
Negative themes about Lee	Themes against Lee as a responsible, creditworthy author	21.2%
Lee needs to disclose help: <i>Lee needs to acknowledge or disclose their use of an assistant</i>	“He [Lee] wouldn’t have written that novel without ChatGPT so he should acknowledge that fact” [AI-L] “The use of a ghost writer is legitimate, but I do think that some credit or acknowledgement needs to be given” [Hu-H]	12.2%
Lee was deceptive, dishonest, or disrespectful: <i>Lee lied, was deceptive, unethical, deceitful, dishonest, etc</i>	“it does come across as deceitful that she [Lee] chose to not reveal that she had assistance” [AI-M] “To claim 100% of the book as his [Lee’s] own work is dishonest” [Hu-L]	4.7%
Lee is not the author: <i>Lee is not the author or not the creator of the work</i>	“Lee should not be considered as the author of the novel. Giving prompts to an AI model is not the same as you being an author” [AI-H] “Lee did not create the work because it did not come from his imagination” [Hu-H]	1.9%
Lee engaged in plagiarism: <i>Specific mention of Lee engaging in plagiarism</i>	“Her [Lee] not mentioning ChatGPT is plagiarism” [AI-L] “While Lee provided prompts, the work is not all theirs and this constitutes plagiarism” [Hu-M]	0.9%
Lee is merely an editor: <i>Lee just edited the work of others</i>	“The human assistant should be listed as the author and Lee should be listed as editor” [Hu-H]	0.9%
Mixed themes about Lee	Ambivalent themes about Lee’s contribution	6.9%
Lee did prompt engineering: <i>Lee gave prompts, instructions, or ideas</i>	“Lee wrote the prompts, the AI can make his job easy” [AI-L] “Lee was the one that came up with the ideas and prompts but...the human assistant...wrote the novel” [Hu-H]	6.9%
Positive themes about assistant	Themes in favour of the assistant as a responsible, creditworthy author	20.5%
Assistant is the creator or author: <i>The assistant is the author, the creator, made significant contributions, etc</i>	“The novel was created by AI, for the most part, with only small tweaks being made by Lee” [AI-H] “The assistant wrote half of the book so therefore they are technically an author also” [Hu-M]	11.7%

Table 3 (continued)

Theme name: description	Illustrative quotes	Theme freq
Assistant deserves credit: <i>The assistant deserves full or partial credit</i>	“I think chatgpt should be credited but to a very minor degree” [AI-L] “The human assistant is the one that actually wrote the stories and therefore they should get the credit” [Hu-H]	7.5%
Assistant is responsible: <i>The Assistant is fully or partially responsible; shares some responsibility or accountability</i>	“Lee still had to provide the prompts so responsibility is roughly shared between Lee and ChatGPT” [AI-H] “I think that since it was written half and half, both can be held responsible as authors” [Hu-M]	1.4%
Negative themes about assistant	Themes against the assistant as a responsible, creditworthy author	9.6%
Assistant is not responsible: <i>The Assistant is not at all responsible or accountable</i>	“I do not think it is possible for ChatGPT to be accountable for the contents of the novel as this requires some personal identification with the work” [AI-L] “If only under Lee's name, all responsibility/credit for the content would rest solely with Lee” [Hu-M]	3%
Assistant is not the author: <i>The Assistant is explicitly mentioned as not being an author</i>	“It is a tool in the end, listing it as an author would be like listing ‘Google & I’ as an author” [AI-M] “The human assistant didn't do enough to be considered the author” [Hu-L]	2.5%
Assistant deserves no credit: <i>The Assistant does not need or deserve any credit</i>	“there is no point in giving credit to ChatGPT” [AI-M] “If the human assistant is a ghostwriter, and they were paid, then they should receive no credit for the novel” [Hu-H]	1.3%
Use of AI inappropriate in this context: <i>Inappropriate or wrong to use AI for this purpose or in this context</i>	“Something needs to be done to safeguard genuine writers from being drowned out by this new wave of voiceless, nonsensical drivell people are overwhelming publishers with and claiming as their own” [AI-H] “ChatGPT is not a person, so shouldn't be an author” [AI-H]	1%
AI is not a person	“Lee is a parasite, using AI steals from other authors' work” [AI-H]	0.8%
AI just copies the work of others		
Mixed themes about assistant	Ambivalent themes about the assistant's contribution	9.7%
Contract in place or use of ghost writing: <i>Mentions a contract, payment for work, agreement, or ghostwriting arrangement in place</i>	“ChatGPT is a bit like a ghost writer” [AI-M] “If it is of mutual agreement the use of ‘ghost writers’ is a common practice. While the writer just receive [sic] the base payment, the author is the ‘face’ that is the selling point” [Hu-M]	4.3%
Assistant helped: <i>The Assistant helped but without being an author or a mere tool</i>	“ChatGPT assisted Lee with the intro of the story” [AI-L] “Lee is the mastermind of the story but he needed some help to write his ideas” [Hu-L]	2.8%
Assistant is a tool: <i>The AI is a mere tool</i>	“The AI is only a tool in the hands of the author” [AI-M]	2.6%

Bold numbers represent the total frequency for each major theme

Table 4 Frequency of themes across conditions

Major themes	Type of assistant: AI assistant	Type of assistant: human assistant	Degree of assistance: high	Degree of assistance: medium	Degree of assistance: low
<i>Positive themes about Lee</i>	15.6%	16.5%	7.8%	13.2%	11%
<i>Negative themes about Lee</i>	11.4%	9.8%	9.2%	6.8%	5.1%
<i>Mixed themes about Lee</i>	4.9%	2.4%	3.3%	2.3%	1.3%
<i>Positive themes about assistant</i>	7.8%	12.7%	8.4%	9.1%	3%
<i>Negative themes about assistant</i>	6.9%	2.7%	3.5%	3%	3.1%
<i>Mixed themes about assistant</i>	4.6%	4.7%	2.5%	2.8%	4.5%
Totals	51.2%	48.8%	34.7%	37.2%	28.1%

Bold numbers indicate column totals for each experimental condition

in the themes about the Assistant in this regard. In particular, there were more positive (12.7% vs 7.8%) and less negative (2.7% vs 6.9%) themes for the human assistant compared to the AI assistant. Further, several extra negative themes emerged when the AI assistant was used which focused on the AI assistant not being a person, the inappropriateness of using AI in this context, and the concern that AI just copies the work of other (human) authors. Mixed views about Lee were higher for the AI assistant, as the prompt engineering sub-theme that comprised that code was mentioned more often with the AI assistant. When comparing the degree of assistance, a high degree of assistance led to the lowest frequency of positive themes and the highest frequency of negative and mixed themes about Lee. In contrast, medium or low degrees of assistance led to more positive and less negative themes about Lee, compared to a high degree of assistance. In terms of the themes raised about the assistant when varying degrees of assistance, the clearest shifts are in the condition with a low degree of assistance, where we see the lowest frequency of positive themes about the assistant and the highest frequency of mixed views.

An issue that cut across several themes is the idea that GenAI is just a tool (“*ChatGPT is a tool created to help us, just like a computer or a cellphone*” [AI-M]) and not a person, and thus not the sort of thing that can be responsible (“*I do not think it is possible for ChatGPT to be accountable for the contents of the novel as this requires some personal identification with the work*” [AI-L]), needs credit (“*Since ChatGPT is not a person, I don’t particularly feel it’s necessary for Lee to credit it*” [AI-M]), or can receive compensation for its work (“*ChatGPT does not gain anything from receiving credit for the story*” [AI-H]). However, while some participants explicitly tied personhood to authorship (“*ChatGPT is not an author, an author is a person*” [AI-L]; “*it is a norm that authors are humans*” [AI-M]), other participants seemed comfortable positioning ChatGPT as an author (“*ChatGPT did the bulk of the work so it should be listed as a co-author*” [AI-H]; “*Lee only gave hints and*

corrections, so ChatGPT should have been the author” [AI-H]; “*Both Lee and ChatGPT should be listed as writers of the novel*” [AI-M]). A key difference that emerged between AI and human assistance is that the presence of a contractual agreement can only exist with a human assistant, and this impacted how participants saw the situation (“*it mostly depends on the agreement the author made with the [human] assistant if he or she should be listed as an author*” [Hu-M]).

Some participants worried about the broader impact of AI on writing (“*really against the use of AI by writers, takes away all the skill required to become one*” [AI-M]), including its training on data produced by other writers (“*using AI steals from other authors’ work*” [AI-H]). However, others saw it as an acceptable source of inspiration (“*Asking ChatGPT to produce the opening page from Lee’s prompts is similar to Lee brainstorming his ideas with friends*” [AI-L]). The dishonesty or deceptiveness in Lee’s failure to disclose assistance was an important theme (“*It is unethical for Lee, a published novelist, to take full credit for a novel that was only partially their creation*” [Hu-M]). Reasons mentioned for Lee not needing to disclose assistance included that there may have been a contract in place with a human ghostwriter, the degree of assistance was too small, the use of AI tools do not need to be acknowledged, and the use of unacknowledged assistants is a common practice in the arts (“*some famous artists have painters assistants who do the majority of the painting...The artist does not always credit them*” [AI-H]).

5 Discussion

We examined how the degree of assistance and type of assistant impacts assessments of authorship, creatorship, and responsibility for a creative text, and the importance of disclosing that assistance. Our first hypothesis focused on the impact of the degree of assistance (high, medium, or low) on these assessments and our second hypothesis on whether

the type of assistant (human or Generative AI) influenced these assessments.

Our first hypothesis was fully supported for both Lee and the Assistant, indicating that the degree of assistance exerted a significant effect on perceptions of authorship, creatorship, responsibility, and disclosure. When Lee received higher as compared to lower levels of assistance, Lee was seen as less of a creator and author, as less responsible for that text, and as having a greater need to disclose the assistance. Similarly, when the Assistant gave higher rather than lower levels of assistance, the Assistant was seen as more of a creator and author, and more responsible for the text. We also found some support for this hypothesis in our qualitative data where a similar pattern emerged, with higher degrees of assistance leading to less positive and more negative and mixed themes about Lee. Further, mentions about the assistant being an author or creator were lowest in the low assistance condition, in line with our hypothesis.

The importance of the degree of assistance received has implications for scholarship and practice in terms of the interplay between human content creators and the GenAI tools that they utilise (Hurler 2023; Knibbs 2022). This suggests that rather than merely focusing on whether AI tools have been used, it is more important to focus on how much assistance the AI tools provided. This supports efforts at developing frameworks for capturing what role GenAI tools played in producing academic content (Cho et al. 2023), but also suggests the need to extend these efforts to narrative and other forms of creative writing, as well as the importance of documenting human inputs. This finding also supports a focus on what Jenkins and Lin (2023) call the “continuity” of AI text in the final product, as this is one way of capturing the degree of AI assistance. This conclusion is also relevant for legal and policy discussions on what human contribution is sufficient for them to be acknowledged as an author under the law.

Our second hypothesis was partially supported, with all variables significantly different as expected for the assistant (i.e. the authorship, creatorship, and responsibility of the human compared to AI assistant), but only the disclosure variable was significantly different for Lee (i.e., Lee’s need to disclose assistance when varying whether it was a human or AI assistant). When focusing on the assistant only, we found as expected that participants assigned higher rates of authorship, creatorship, and responsibility to human rather than AI assistants providing the same level of assistance. When focusing on Lee only, whether the assistant is a human or a Generative AI did not have a significant impact on participants’ assessments of the extent to which Lee was an author, creator of, and responsible for the text, although it did have a significant impact on participants’ assessments of Lee’s need to disclose that assistance. The qualitative data further supported this finding, with more positive and less

negative themes raised about the human assistant compared to the AI assistant. This supports various findings in the literature that show the presence of a “human bias” in which AI outputs are viewed less favourably than comparable human outputs (Bankins et al. 2022; Chiarella et al. 2022; Jia and Liu 2021). However, we significantly extend these findings to a new context by providing insights on perceptions of AI authorship, creatorship, and responsibility, which are dimensions that are becoming more important to evaluate ethically and legally as the use of GenAI tools increases.

While participants assigned higher levels of these variables to human over AI assistants, they still seemed willing to assign some degree of creatorship, authorship, and responsibility to AI assistants. For the creatorship, authorship, and responsibility variables, the means for the AI assistant in the medium and high conditions were greater than 4 (neutral point). This indicates that participants in these conditions agreed more than they disagreed that ChatGPT should be regarded as an author and creator of, and be responsible for, the text it generates. This has implications for the broader debate around whether GenAI can count as an author. In particular, it challenges the ‘second view’ identified in our literature review, that GenAI tools categorically cannot count as authors and cannot be responsible for the work they produce to any extent (Polonsky and Rotman 2023), which is also the current dominant view in legal scholarship (White and Matulionyte 2020). Our participants thus offer some support for the first and third views from our review, and this suggests that we may need to move beyond “binary definitions of authorship” (van Dis et al. 2023). However, our results were clearly mixed, with some respondents offering statements that support the view that personhood is both essential for being an author and is something that GenAI tools lack (Hosseini Resnik et al. 2023). Another important difference between human and AI assistants that emerged from the qualitative data was the contractual arrangements that authors can have with human assistants, which is not an arrangement that can be directly replicated with GenAI technologies.

Drawing the two hypotheses together tells us that what matters most when assessing the authorship of a human writer is how much assistance they received, and not who (or what) provided that assistance. However, the importance of Lee disclosing assistance was significantly greater when the assistant was a human rather than a Generative AI. An explanation for this finding seems to emerge from the qualitative data, where we find higher mentions of themes about Lee not having to disclose assistance in the AI assistant condition compared to the human assistant condition. One reason for this that emerged from the data is that some participants do not think the use of AI “tools” needs to be disclosed. Further, when participants noted that human assistance did not need to be acknowledged, this was typically either

because the degree of assistance was minimal or because of the presence of (assumed) contractual arrangements. This has implications for discussions around whether norms of disclosure differ for human and AI assistance (Polonsky and Rotman 2023), and debates about whether the standards for contributing to authorship should differ for humans and AI (Miller 2023).

6 Limitations and future research directions

Experimental vignette studies have established limitations, given their hypothetical nature. We have addressed this through careful vignette design to ensure their external validity (Aviram 2012). Sampling choices can also impact the generalizability of results, and it would therefore be helpful to replicate our study with other samples. Alternative sampling techniques, such as using snowball and network samples to target specific groups, such as academic writing experts or working novelists, could also be considered to help validate the results found here (Landers and Behrend 2015).

Future work could extend our approach to consider a broader range of cases. In particular, it would be useful to examine whether the effects found here replicate in the case of GenAI producing non-textual outputs, such as images, music, or video, and when producing non-fiction content, such as news articles, academic papers, or business reports, where the veracity of its outputs (given concerns around AI “hallucinations”) is more important than it is in our fictional novel case (Alkaissi and McFarlane 2023). Given the focus of much of our literature review is on academic writing, an extension of the current study to examine the use of GenAI in this specific context would be a particularly helpful area of future research.

7 Conclusion

The increasing importance of Generative AI raises a range of ethical, philosophical, and legal issues. We focused on examining perceptions around the degree to which a human writer is considered the responsible creator and author for content generated with differing degrees of assistance from a Generative AI or human assistant, as well as exploring when disclosure of that assistance is required. We found that, for a human author, the degree of assistance matters for our assessments of their level of authorship, creatorship, and responsibility, but not what or who rendered that assistance except that it was more important to disclose human rather than AI assistance. However, regarding types of assistants, human assistants were viewed as having higher rates of authorship,

creatorship, and responsibility compared to AI assistants rendering the same level of support. These results help us to better understand emerging norms around combined human-AI generated content, which has significance for a range of important practical and legal debates in the use of increasingly sophisticated GenAI technologies.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s00146-024-02081-0>.

Acknowledgements We acknowledge funding support for data collection from the Macquarie University Ethics and Agency Research Centre. We thank Ed Chen for his assistance in sourcing relevant literature and participants at the “Workshop on AI, Arts and Copyright” for their feedback on an earlier version of the paper.

Funding Open Access funding enabled and organized by CAUL and its Member Institutions. Macquarie University Ethics and Agency Research Centre.

Data availability The pre-registration details, anonymous quantitative data, and analysis scripts for this study are available via OSF (<https://osf.io/>).

Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Alkaissi H, McFarlane SI (2023) Artificial hallucinations in ChatGPT. *Cureus*. <https://doi.org/10.7759/cureus.35179>
- Aviram H (2012) What would you do? Conducting web-based factorial vignette surveys. *Handbook of survey methodology for the social sciences*. Springer, New York
- Bankins S, Formosa P, Griep Y, Richards D (2022) AI decision making with dignity? Contrasting workers’ justice perceptions of human and AI Decision making in a human resource management context. *Inf Syst Front* 24:857–875
- Braun V, Clarke V (2006) Using thematic analysis in psychology. *Qual Res Psychol* 3(2):77–101
- Carter N, Bryant-Lukosius D, DiCenso A, Blythe J, Neville AJ (2014) The use of triangulation in qualitative research. *Oncol Nurs Forum* 41(5):545–547
- Chiarella SG, Torromino G, Gagliardi DM, Rossi D, Babiloni F, Cartocci G (2022) Investigating the negative bias towards artificial intelligence. *Comput Hum Behav* 137:107406

- Cho WI, Cho E, Cho K (2023) PaperCard for reporting machine assistance in academic writing. *arXiv* 2310.04824
- Crawford J, Cowling M, Ashton-Hay S, Kelder JA, Middleton R, Wilson G (2023) Artificial intelligence and authorship editor policy. *J Univ Teach Learn Pract*. <https://doi.org/10.53761/1.20.5.01>
- Dehouche N (2021) Plagiarism in the age of massive generative pre-trained transformers (GPT-3). *Ethics Sci Environ Polit* 21:17–23
- Douglas BD, Ewell PJ, Brauer M (2023) Data quality in online human-subjects research. *PLoS ONE* 18(3):e0279720
- Edwards B (2023) Purely AI-generated songs declared ineligible for Grammy awards. *Ars Technica*. <https://arstechnica.com/information-technology/2023/06/purely-ai-generated-songs-declared-ineligible-for-grammy-awards/>
- Epstein Z et al (2023) Art and the science of generative AI. *Science* 380(6650):1110–1111. <https://doi.org/10.1126/science.adh4451>
- Formosa P, Montefiore T, Ghasemi O, McEwan M (2023) An empirical investigation of the Gamer's dilemma. *Behav Inf Technol* 43(3):571–589
- Gervais D (2020) The machine as author. *Iowa Law Rev*. 105
- Ginsburg J, Budiardjo L (2019) Authors and machines. *Berkeley Tech LJ* 34:343
- Hosseini M, Rasmussen LM, Resnik DB (2023a) Using AI to write scholarly publications. *Account Res*. <https://doi.org/10.1080/08989621.2023.2168535>
- Hosseini M, Resnik DB, Holmes K (2023b) The ethics of disclosing the use of artificial intelligence tools in writing scholarly manuscripts. *Res Ethics*. <https://doi.org/10.1177/17470161231180449>
- Hu K, Hu K (2023) ChatGPT sets record for fastest-growing user base—analyst note. *Reuters*. <https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/>
- Hurler K (2023) AI art piece wins Sony's photography contest, artist refuses the award. *Gizmodo Australia*. <https://gizmodo.com.au/2023/04/ai-art-piece-wins-sonys-photography-contest-artist-refuses-the-award/>
- Jenkins R, Lin P (2023) AI-assisted authorship. *SSRN Electron J*. <https://doi.org/10.2139/ssrn.4342909>
- Jia C, Liu R (2021) Algorithmic or human source? *Media Commun (Lisboa)* 9(4):170
- Kakodkar P, Bhonde R (2022) Authorship for interdisciplinary research. *Medi J Dr DY Patil Univ* 15(4):483
- Knapp JC, Hulbert MA (2017) *Ghostwriting and the ethics of authenticity*. Springer, Cham
- Knibbs K (2022) A novelist and an AI cowrote your next cringe-read. *Wired*. <https://www.wired.com/story/k-allado-mcdowell-gpt-3-amor-tinge/>
- Land MK, Aronson JD (2020) Human rights and technology. *Annu Rev Law Soc Sci* 16(1):223–240
- Landers RN, Behrend TS (2015) An inconvenient truth: arbitrary distinctions between organizational, mechanical Turk, and other convenience samples. *Ind Organ Psychol* 8(2):142–164
- Lee JY (2023) Can an artificial intelligence chatbot be the author of a scholarly article? *J Educ Eval Health Prof* 20:6
- Love H (2002) *Attributing authorship*. Cambridge University Press
- Lund BD, Wang T, Mannuru NR, Nie B, Shimray S, Wang Z (2023) ChatGPT and a new academic reality. *J Assoc Inf Sci Technol* 74(5):570
- McEwan M, Blackler A, Wyeth P, Johnson D (2020) Intuitive interaction with motion controls in a tennis video game. *Proceedings of the annual symposium on computer-human interaction in play*. pp. 321–333
- McKinsey (2023) Economic potential of generative AI. <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier>
- Miller R (2023) Holding large language models to account. *Proceedings of the AISB convention 2023*; <https://aisb.org.uk/wp-content/uploads/2023/05/aisb2023.pdf>
- Mogg T (2023) ChatGPT behind influx of AI-written books on Amazon. *Digital trends*. <https://www.digitaltrends.com/computing/chatgpt-behind-influx-of-ai-written-books-on-amazon/>
- Montal T, Reich Z (2017) I, robot. You, journalist. Who is the author? *Digit J* 5(7):829
- Nissenbaum H (2011) A contextual approach to privacy online. *Daedalus* 140(4):32–48
- Nowak-Gruca A (2022) Could an artificial intelligence be a ghost-writer? *J Intellect Prop Rights* 27:25–37
- Nylenna M, Fagerbakk F, Kierulf P (2014) Authorship. *BMC Med Ethics* 15(1):53
- Polonsky MJ, Rotman JD (2023) Should artificial intelligent agents be your co-author? *Aust Mark J* 31(2):91
- Rallabhandi K (2023) The copyright authorship conundrum for works generated by artificial intelligence. *George Wash Int Law Rev* 54(2):311–347
- Riley LA, Brown SC (1996) Crafting a public image. *J Bus Ethics* 15(7):711–720
- S O'Connor, ChatGPT (2023) Open artificial intelligence platforms in nursing education. *Nurse Educ Pract* 66:103537
- Schapiro Z (2020) Deep fakes accountability act. *Boston Coll Intellect Prop Technol Forum* 2020:1–16
- Siegerink B, Pet LA, Rosendaal FR, Schoones JW (2023) ChatGPT as an author of academic papers is wrong and highlights the concepts of accountability and contributorship. *Nurse Educ Pract* 68:103599–103599
- Stokel-Walker C (2023) ChatGPT listed as author on research papers. *Nature* 613(7945):620–621
- Sun H (2022) Redesigning copyright protection in the era of artificial intelligence. *Iowa Law Rev* 107:1213
- Tu S (2021) Use of artificial intelligence to determine copyright liability for musical works. *W Va Law Rev* 123(3):835
- van Dis EAM, Bollen J, Zuidema W, van Rooij R, Bockting CL (2023) ChatGPT: five priorities for research. *Nature* 614(7947):224–226
- Van Gelder RN (2023) The pros and cons of artificial intelligence authorship in ophthalmology. *Ophthalmology* 130(7):670
- Wallander L (2009) 25 years of factorial surveys in sociology. *Soc Sci Res* 38(3):505–520
- White C, Matulionyte R (2020) Artificial intelligence painting the bigger picture for copyright ownership. *Aust Intellect Prop J*. <https://doi.org/10.2139/ssrn.3498673>
- Yanisky-Ravid S (2017) Generating Rembrandt. *Mich St L Rev*. 659

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.