

Alleviating Aversion to Artificial Intelligence in Digital Advertising with Humorous Disclosures

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Abstract

Artificial Intelligence (AI) is increasingly used in creating online advertisements and posts. Yet, its prominent role in content creation remains often undisclosed due to potential aversive consumer reactions. In three studies, we examined how advertisers can transparently disclose AI authorship in ads without compromising marketing effectiveness. Study 1 was a proof-of-concept study, revealing that humor could alleviate negative evaluations (when the joke was less funny, AI received more negative ratings than a human author; however, when the joke was funnier, AI received similar ratings to a human author). Study 2 incorporated jokes into disclosures about AI authorship in advertising and found that humor reduced the negative effect of AI authorship because it shortened the psychological distance toward AI, positively impacting purchase intentions. Study 3 replicated these effects and tested a boundary condition, showing that humor mitigated algorithm aversion only when it was sufficiently funny.

Keywords: AI-generated content, digital advertising, disclosures, humor, psychological distance.

1. Introduction

Artificial Intelligence (AI) technology has increasingly been used to generate various content types, from text to videos. The marketplace today already features advertisements and commercials entirely created by AI (Van der Wilt, 2024), and this trend is likely to continue and expand. However, consumers have been demonstrating aversion toward AI and its output, a phenomenon known as “algorithm aversion”. Generally, people tend to lose trust in algorithms quicker than in humans (Dietvorst, Simmons, & Massey, 2015) and exhibit greater skepticism toward AI- (vs human) generated outcomes, such as decisions (Bigman & Gray, 2018),

recommendations (Yeomans, Shah, Mullainathan, & Kleinberg, 2019), or products and agents (Mahmud, Islam, Ahmed, & Smolander, 2022). Therefore, our aim was to search for the optimal tactics to transparently disclose the use of AI in digital advertising (which constitutes an ethical requirement) and to simultaneously alleviate algorithm aversion without harming the key performance indicators for advertising, such as purchase behavior (which constitutes a business requirement).

Our work extends current knowledge on disclosures and human-AI interactions in several ways. First, we test humor as a new tactic to transparently disclose AI authorship in advertising without negatively affecting purchase behavior. Our approach is novel because the intersection of humor and algorithm aversion has been underexplored in prior literature. Several strategies are known to counteract algorithm aversion in areas like decision-making or labor management (e.g., explaining how algorithms work [see Cadario et al., 2021]). However, these strategies cannot be viably applied to disclosing AI-generated content online due to constraints related to time, space, audience attention, and the risk of diversion. For example, while explaining how AI works may be practical in such contexts as healthcare (Cadario, Longoni, & Morewedge, 2021), doing so in digital advertising could be overly time-consuming, take up too much space, and bore online users who are expected to engage with the ad quickly. Humor, however, has long been recognized for its ability to capture attention (Eisend, 2009) and thus could become an effective tactic for disclosing AI authorship in ads.

Second, humor has been mostly tested as a product of AI work (Bower & Steyvers, 2021) or as delivered by AI (Tay, Low, Ko, & Park, 2016), but not as a way to address AI authorship and mitigate algorithm aversion. In other words, AI has been extensively studied as a source of humor but not as a target or subject of humor, and our research aims to bridge this gap.

Third, we offer a new explanation for *how* humor can alleviate algorithm aversion. We apply the social categorization theoretical framework to show that humor reduces the social dimension of psychological distance toward an outgroup entity like AI. Essentially, we reveal that highly amusing humor helps perceive AI as similar to ingroup members, humans (i.e., facilitates humanization of AI), thereby reducing adverse reactions. Our research is novel because humor has never been tested in the context of reducing psychological distance (prior research has only suggested that distality can increase humorous responses, e.g., as time passes, individuals tend to perceive tragic events less seriously and more humorously [McGraw, Williams, & Warren, 2014]).

Fourth, while humor has proven successful in advertising (Eisend, 2009), its effects vary across different fields. For example, in human-computer interactions, humor can detract from electronic service experiences (Dolen, Ruyter, & Streukens, 2008), and often fails to enhance the likeability of robots (Mirnig, et al., 2017; Menne, Lange & Unz, 2018) or needs to be combined with other cues to become effective (Schanke, Burtch, & Ray, 2021). Similarly, research on warnings and disclaimer labels has shown mixed results, with some studies reporting null effects (Frederick, Sandhu, Scott, & Akbari, 2016) and others identifying negative outcomes from humorous disclosures (Thomson, Vandenberg, & Fitzgerald, 2012). Our work contributes to the literature by offering an explanation for these inconsistencies, suggesting that the variability in prior findings may stem from different levels of humor strength in the stimuli used. Through three experiments, we demonstrate that humor can be effective if sufficiently funny.

In sum, our research offers insights into the emerging field of AI disclosure policies, an area gaining significance because legislation worldwide prepares to mandate transparency regarding AI-generated content (see, e.g., the draft of the AI act in the European Union [European Commission, 2021]). Given that AI has passed the Turing test for years (Oremus, 2022), and distinguishing between AI-generated versus human-created content becomes increasingly challenging for the average consumer, clear disclosures are essential. Our study provides practical guidance on how to openly reveal AI involvement without undermining marketing effectiveness.

2. Theoretical background

2.1. Disclosures about AI authorship

Disclosure is an act of making certain information about a particular piece of content known to the public

(through a warning label or a disclaimer byline). It reveals details that are not immediately obvious or directly observable, such as sponsorship, persuasive intent or authorship. While disclosures are meant to inform and ensure transparency, recent research suggests that they rather produce negative marketing effects. These include less favorable attitudes and lower trustworthiness to the source of a message (Eisend, van Reijmersdal, Boerman, & Tarrahi, 2020).

Given the general aversion toward automated labor and its output, disclosing AI as a source or an author of an advertisement can potentially lead to even more unfavorable responses. This can be particularly evident considering that human authorship is often rated more positively across various domains involving content generation, such as journalism (Graefe, Haim, Haarmann, & Brosius, 2018), poetry (Kobis & Mossink, 2021), or visual arts (Granulo, Fuchs, & Puntoni, 2021). Thus, there is a growing need to identify a strategy for disclosures that maintains ethical standards without undermining marketing effectiveness.

2.2. Overcoming negative effects of AI authorship with humor

Humor serves as a viable tool in forming interpersonal relationships and governing group processes. Specifically, humor is instrumental in maintaining close relationships (Hall, 2017), and various types of humor play a role in identifying ingroup members or contrasting away from outgroups (Meyer, 2021). For example, disparagement humor involves making jokes at the expense of others, often targeting outgroups or individuals perceived as different. This is an aggressive type of humor that can include racist, sexist, or otherwise prejudiced jokes. By ridiculing outgroup members, disparagement humor strengthens ingroup membership, but it simultaneously increases prejudice and hostility towards those outside the group (Ford, 2015). On the other hand, affiliative humor is intended to promote social bonding and inclusivity. It involves making light-hearted and inclusive jokes, aimed at fostering a sense of shared understanding and camaraderie. This positive type of humor facilitates social interactions (Caron, 2002), helping find similar others and connect with them (Hall, 2015). Positive humor is regarded as socially attractive (Greengross & Miller, 2011), and in many studies, participants report a preference for companions, friends and/or partners who demonstrate a good sense of humor (Lundy, Tan, & Cunningham, 2005).

Given that AI is often viewed as a social actor (see the Computers Are Social Actors paradigm, Nass, Steuer, & Tauber, 1994) and even as an outgroup member in contrast to humans (Oh, et al., 2017), humor

can serve as a practical instrument in human-AI interactions. For example, positive humor can be used to establish a certain connectedness with AI, just as it is exploited to build relationships among humans. In scenarios where AI becomes an author of creative content, we predict that positive humor (such as affiliative jokes) can reduce the perceived “otherness” of AI, aligning it more closely with ingroup characteristics and fostering a more inclusive perception. Indeed, previous studies found that robots using humor (versus serious robots) were rated as more human-like (Dybala, Ptaszynski, Rzepka, & Araki, 2009; Schanke, Burtch, & Ray, 2021). Thus, we propose that when affiliative humor is integrated into AI authorship disclosures, it can change the perception of AI from an impersonal outgroup member to a more relatable ingroup entity. This transformation should positively impact advertising effectiveness (i.e., purchase intentions).

H1: The funniness of disclosure reduces the negative effect of AI authorship, such that a humorous disclosure regarding AI authorship leads to higher purchase intentions than a serious disclosure about AI authorship.

2.3. Social dimension of psychological distance as a mechanism

Psychological distance refers to the extent to which people perceive objects, individuals, and events as distant or close in their minds. This concept encompasses various dimensions, including temporal, spatial and social distances (Trope, Liberman, & Wakslak, 2007). In human-AI interactions, the focal point often lies in the social dimension of psychological distance, which pertains to the sense of similarity one feels towards others. In this vein, similar others (e.g., those representing the same social group or sharing the same social attributes, such as age, gender, nationality, and political views) will be regarded as psychologically closer. In contrast, dissimilar others (e.g., outgroup members) will be considered more distant. Since AI is often considered an outgroup entity (i.e., opposite to humans), it is more likely to be viewed as dissimilar from humans and thus socially distant (Ahn, Kim, & Sung, 2021).

In social interactions, humor serves as a signaling phenomenon indicating interest and attraction (for a review, see Warren, Barsky, & McGraw, 2018) but also similarity (for a review, see Meyer, 2021). When people laugh over the same joke, it often signals shared perspectives, experiences, or values, thereby establishing a sense of commonality and closeness (Lynch, 2010). This shared amusement suggests that

individuals belong to the same social group or can relate to similar contexts, fostering a perception of psychological closeness. In the context of AI, when humor is incorporated into disclosures about AI authorship, it can create a sense of similarity between humans and AI and therefore reduce the perceived social distance to AI. This reduction in psychological distance should, in turn, improve the persuasiveness of an ad (e.g., by increasing purchase intentions) because audiences are more likely to respond positively to messages from sources they feel connected to or similar to (Faraji-Rad, Samuelsen, & Warlop, 2015).

H2: The effect of humorous (vs serious) disclosure about AI authorship on purchase intentions (H1) is mediated by the social dimension of psychological distance, such that the funnier the disclosure about AI authorship, (a) the closer the AI is perceived psychologically, and (b) this, in turn, leads to higher persuasiveness of an ad (i.e., higher purchase intentions).

2.4. Strength of humor as a boundary condition

Humor strength refers to the degree of funniness elicited by a stimulus, where a highly funny joke is considered to exhibit strong humor, while a less funny joke is categorized as having weaker humor (Cline & Kellaris, 2007). Beyond the mere presence of humor, its strength plays an important role in shaping audience perceptions and responses, as a funnier joke prompts more laughter, draws greater attention and is better remembered than a less funny joke.

Different contexts require varying levels of humor strength because insufficient humor may not engage the audience or hold their interest. In serious settings, such as health communications (Goetz, Kiesler, & Powers, 2003) or conflict mediation (Stoll, Jung, & Fussell, 2018), humor often fails to resonate. This is likely because audiences in these scenarios focus on processing critical information, not entertainment. Consequently, for humor to be effective in such contexts, it should be exceptionally strong to shift the audience’s mindset from analytical to receptive. For example, in advertising, strong (vs weak) humor captures attention better, improves ad memorability (Cline & Kellaris, 2007) and builds more favorable ad attitudes (Cline, Altsech, & Kellaris, 2003).

Taken together, we posit that in more serious contexts, where the audience is focused on critical information rather than entertainment (such as in disclosures about authorship) and when the critical information refers to the outgroup entity (such as AI), the humor must reach a high threshold of amusement to be effective. High humor strength in such settings is

necessary for several reasons. First, outgroup members are often perceived with greater social distance, and stronger humor is required to overcome this gap and create a sense of familiarity. Second, outgroup status can trigger pre-existing biases (e.g., algorithm aversion) or skepticism, so a stronger dose of humor is needed to break down these barriers and foster a connection. In sum, strong – particularly affiliative – humor should reduce social distance and enhance the overall persuasiveness of the message. In contrast, weak humor may fail to engage the audience, leaving negative biases, such as algorithm aversion, unchallenged. We therefore propose the following:

H3: The effect of humorous (vs serious) disclosure about AI authorship on purchase intentions (H1) is moderated by the strength of humor in the disclosure, such that the less funny the disclosure, the more negative effect of AI authorship on purchase intentions.

3. Overview of studies

To test our hypotheses, we conducted three experiments. Study 1 was a proof-of-concept study exploring the overall potential of humor to alleviate algorithm aversion. It examined the effect of AI as a source of humor on the perceived funniness of jokes disclosed as authored by AI versus a human. We found that an AI author received similar ratings to a human author when the joke was funny; however, when the joke was less funny, AI received more negative ratings than a human author. This suggests that humor strength can moderate the impact of AI authorship on audience perceptions, with stronger humor potentially leveling responses to AI and human creators. Building on these findings, Study 2 further investigated the effects of humor in disclosing the authorship of AI-generated advertisements. Specifically, we incorporated jokes into disclosures about AI authorship of an ad and examined their effects on advertising persuasiveness (H1) and the underlying mechanism (H2). In the third experiment (Study 3), we replicated the effects from Study 2 with different stimuli and a different product category, using varying levels of humor in disclosures. This approach allowed us to test humor strength as the boundary condition of the observed effect (H3).

4. Study 1

4.1. Pretest

The pretest to Study 1 was run in 2022 to identify two jokes that would differ in their levels of funniness.

As we intended to test the effects of humor on mitigating algorithm aversion, we needed jokes generated by a non-human entity. Therefore, to create the jokes, we used the "Joking Computer"¹, the generative AI technology available at that time, and we selected four jokes for pretesting (Table 1).

We recruited 200 UK-based participants on Prolific (198 women aged between 18 and 60 years, $M_{\text{age}} = 37.21$, $SD = 10.65$). They were presented with the jokes in randomized order and asked to rate their funniness on a seven-point scale, where 1 signified "not at all funny", while 7 indicated "very funny". The actual authorship and source of the jokes were not revealed.

We conducted a repeated measures analysis of variance (ANOVA) with Bonferroni adjustment for multiple comparisons, where perceived funniness served as a within-subjects factor. This analysis revealed a significant main effect of jokes on perceived funniness ($F(3,597) = 51.81$, $p < .001$). For the subsequent experiment, we selected two jokes with the greatest contrast in funniness ratings: joke #1 ($M_{\#1} = 3.43$, $SE = .11$) and joke #3 ($M_{\#3} = 2.08$, $SE = .10$, $F(1,199) = 104.72$, $p < .001$; Table 1).

Table 1. Perceived funniness of the jokes (pretest to Study 1)

JOKES	MEAN	SE
#1: What do you get when you cross a frog with a street? A main toad	3.43	.11
#2: What do you call a washing machine with a September? An autumn-atic washer	2.27	.09
#3: What is the difference between a good body part and a smart pause? One is a right breast, the other is a bright rest	2.08	.10
#4: What do you call a zucchini social gathering? A courgette together	3.22	.12

4.2. Main study

We conducted an online experiment featuring a disclosure about joke authorship ("This joke has been written by Artificial Intelligence" vs "This joke has been written by a professional copy-writer") as a between-subjects factor and the two pretested jokes (#1 vs #3) as a within-subjects factor. We recruited 240 participants on Prolific, all UK-based and English native-speakers (140 women, 98 men, between 18 and 65 years of age, $M_{\text{age}} = 39.93$, $SD = 12.40$). Participants were randomly assigned to one of two authorship conditions (AI or human). They were instructed to evaluate the funniness of the jokes, presented in a randomized order, using a

¹ <http://joking.abdn.ac.uk/home.shtml>

seven-point scale ranging from 1 (“not funny at all”) to 7 (“very funny”).

We conducted a repeated measures ANOVA with Bonferroni adjustment for multiple comparisons. We found a significant main effect of authorship disclosures on perceived funniness ($F(1,238) = 4.01, p = .04$) and a significant interaction effect between authorship disclosures and jokes on perceived funniness ($F(1,238) = 5.94, p = .01$). Specifically, for the funnier joke (i.e., joke #1), there was no statistically significant difference in perceived funniness in the AI- and human-authorship conditions ($M_{\text{human author}} = 3.45, SE = .14$ vs $M_{\text{AI author}} = 3.47, SE = .14; F(1,238) = .01, p = .90$). However, for the less funny joke (i.e., joke #3), the human-authored version was perceived as more humorous than its AI-counterpart ($M_{\text{human author}} = 2.45, SE = .13$ vs $M_{\text{AI author}} = 1.85, SE = .18; F(1,238) = 10.42, p = .001$; Figure 1).

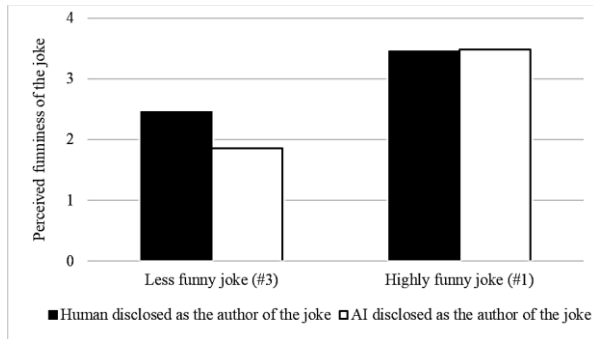


Figure 1. Interaction effect between disclosure about authorship and funniness of a joke on perceived funniness (Study 1)

The findings from Study 1 indicate that as a joke becomes more amusing, the difference in perceived humorousness between AI- versus human-authored content diminishes. Building on this, Studies 2 and 3 integrated jokes into disclosures about ad authorship in advertising to further examine whether humor can tone down negative responses to AI and potentially bring the persuasiveness of AI-authored ads closer to that of human-authored ones. Additionally, the results from Study 1 are technically important because they suggest that in an experiment with a factorial design involving multiple humor and authorship levels (as is the case in our Study 3), one may observe an interaction effect in the manipulation checks of humor. Specifically, highly amusing humor should equalize perceptions of funniness between AI-authorship and no-AI-authorship conditions; however, in less-humorous or no-humor conditions, a reverse effect may emerge, leading to lower ratings for AI authorship.

5. Study 2

This study was designed to test the main effect of humorous disclosure about AI authorship (H1) and its mechanism (H2). Therefore, we conducted a one-factor, between-subjects experiment, where we manipulated disclosure funniness (humorous vs serious) about full AI authorship.

As the stimuli, we used Gencraft.com to create an advertisement promoting a fictitious brand of backpacks, UrbanStride (Table 2). Next, we devised disclosures to (a) communicate AI involvement in creating an ad and (b) introduce a joke about this authorship. In the humor condition, the disclosure read: “100% of this ad was created by AI technology. If it’s a masterpiece, we programmed AI that way. If not, we blame the Wi-Fi – it must have been sending mixed signals”. In the control condition, the disclosure was devoid of humor (“100% of this ad was created by AI technology”). This approach ensured that the authorship information was consistent across both conditions, allowing us to isolate the effect of humor. The presence of apparently serious elements in the humor condition was necessary to maintain the comparability between the control and experimental groups.

Table 2. Stimuli used in Study 2

<i>Humorous disclosure about AI authorship</i>	<i>Serious disclosure about AI authorship</i>

We recruited 215 participants on Prolific (98 women, 110 men, between 20 and 80 years of age with $M_{\text{age}} = 42.46, SD = 14.19$; English-speaking inhabitants of the UK, US and Ireland). We randomly assigned them to one of two experimental conditions. They were requested to watch the ad along with the accompanying byline (disclosures about the author) and answer questions about it. We measured our dependent variable (purchase intentions) with three seven-point items from

Table 3. Measurement scales (Study 2)

<i>CONSTRUCT</i>	<i>ITEMS</i> (all measured on 7-point scales)
Purchase intentions ($\alpha = .95$)	Given the information shown, how probable is it that you would consider the purchase of this product? <i>Not probable:Very probable</i>
	Given the information shown, would you be more likely or less likely to purchase this product? <i>Less likely:More likely</i>
Psychological closeness (1) ($r = .85$, $p < .001$)	The author of this ad is psychologically close to me
	The author of this ad is socially close to me <i>Strongly disagree:Strongly agree</i>
Psychological closeness (2) ($\alpha = .94$)	The author of this ad could have similar tastes to mine
	The author of this ad could have similar values to mine
	I could belong to the same group as the author of this ad
Humanization of an author ($\alpha = .96$)	I am a similar person to the author of this ad <i>Strongly disagree:Strongly agree</i>
	To what extent does this disclosure make you perceive the author of this ad as if it were a person?
	To what extent does this disclosure make you think of the author of this ad as a person?
	To what extent does this disclosure make you think of the author of this ad as a person? <i>Not at all:Very much</i>
Perceived humorousness of a disclosure ($\alpha = .98$)	Please indicate, how well one or the other adjective in each pair describes your overall evaluation of the byline about the author of the ad? The byline was: <i>Not funny:Funny</i> <i>Not amusing:Amusing</i> <i>Not humorous:Humorous</i>

Bruner (2009). To assess our mediator (psychological distance), we employed two scales sourced from different scholars (Li & Sung, 2021; Hernandez-Ortega, 2018) due to our concerns about item ambiguity and uncertainty regarding respondents' comprehension. Higher values indicated greater psychological closeness (shorter distance) to the author of the ad. Additionally, as a robustness check and to better inspect the

investigated phenomena, we measured the extent to which the author was perceived as a person (we used three items adapted from Puzakova and Kwak 2017). We assumed that if humor reduces the social dimension of psychological distance between AI and the consumer, this reduction should also be reflected in the perceived humanization of AI, making it seem more similar to humans. Eventually, we checked our manipulation of humor with three items adapted from Cline, Altsech and Kellaris (2003; Table 3).

An ANOVA was conducted to assess the manipulation of humor in disclosures. There was a significant main effect of humor on the perceived funniness of disclosures ($F(1,213) = 331.37, p < .001$). A disclosure with a joke was rated as funnier ($M = 5.02, SD = 1.58$) than a serious disclosure ($M = 1.54, SD = 1.18$). This result indicates successful manipulation of humor.

To test H1, we used a one-way ANOVA. We found a significant main effect of disclosure funniness on purchase intentions ($F(1,213) = 5.50, p = .02$). More specifically, the humorous disclosure about AI authorship led to higher purchase intentions ($M = 3.40, SD = 1.74$) than a serious one ($M = 2.91, SD = 1.27$).

To test H2, we conducted a mediation analysis using the SPSS PROCESS macro (model 4). Funniness of disclosures about AI authorship was the independent variable (humorous disclosure was coded as 1; serious disclosure was coded as 0), psychological distance (more specifically, closeness) was a mediator, and purchase intentions served as a dependent variable. Funny disclosure led to higher psychological closeness with regard to the author of the ad ($B = 1.27, SE = .15, t = 7.96, p < .001$), which in turn resulted in higher intentions to buy the advertised product ($B = .52, SE = .08, t = 6.40, p < .001$). Our analysis revealed the indirect-only mediation, which suggests no omitted mediators ($B = .66, bootSE = .14, bootLLCI = .39, bootULCI = .96$)². This result offers support for H2.

6. Study 3

This study was designed to examine the main effect of humorous disclosure about AI authorship (H1), its mechanism (H2) and the boundary condition (H3). Thus, we tested various levels of humor and included a control group with no AI involvement in content creation for comparison reasons. Specifically, we conducted a 3 (highly humorous vs less humorous vs serious disclosure) by 2 (disclosure about full-AI

² We obtained similar results for the second measure of psychological closeness. Both measures were highly correlated with the perceived humanization of the author ($r_s > .63, p_s < .001$).

authorship vs disclosure about no-AI authorship) between-subjects experiment.

We ran a pretest to select disclosures that would be sufficiently contrasted in terms of their funniness. Specifically, we employed generative AI technology from Gencraft.com to create advertisements for a burger restaurant. We then crafted various affiliative jokes referencing the authorship of the ad. We devised disclosures that would inform about the authorship of an ad and introduce a joke about this authorship (e.g., “100% of this ad was created by AI technology. If it’s a masterpiece, we programmed AI that way. If not, we blame the office cat for walking on the keyboard”). Next, we pretested the disclosures on a sample of 220 participants via Prolific, and we chose two jokes for further investigation: one with the strongest humor and one with the weakest humor (see Table 4).

For the main study, we recruited 600 participants on Prolific, of whom 586 passed the attention checks (349 women, 229 men, between 19 and 80 years of age with $M_{age} = 44.31$, $SD = 13.33$; UK English-speaking inhabitants). The experimental procedure began with randomly assigning each participant to one of six conditions. First, they were instructed to read an advertisement and the byline detailing its authorship. Next, they answered questions assessing our mediator (psychological distance: measure 1, $r = .85$, $p < .001$; measure 2, $\alpha = .96$), dependent variable (purchase intentions: $\alpha = .95$), robustness checks (humanization of an author: $\alpha = .97$), and manipulation checks (perceived humorousness of a disclosure: $\alpha = .98$). All these scales were the same as in Study 2. The perception of authorship was checked with two questions (e.g., “Based on the information you were given in the disclosure statement, who do you think created this advertisement?” anchored by 1 = “The ad was entirely created by a human author” and 7 = “The ad was entirely created by AI”). Lower values indicated human authorship, while higher values suggested AI authorship ($r = .87$, $p < .001$).

We used ANOVA to check the manipulation of humor and AI authorship. We observed significant main effects of humor ($F(2,580) = 179.87$, $p < .001$; $M_{highly\ humorous\ disclosure} = 5.20$, $SD = 1.47$, $M_{less\ humorous\ disclosure} = 3.97$, $SD = 1.87$, $M_{serious\ disclosure} = 2.10$, $SD = 1.56$) and authorship ($F(1,580) = 18.76$, $p < .001$; $M_{AI\ authorship} = 3.49$, $SD = 2.12$; $M_{no\ AI\ authorship} = 4.05$, $SD = 2.00$) on the perceived funniness of disclosures. Reflecting our findings from Study 1, the interaction effect between the factors was also significant ($F(2,580) = 4.63$, $p = .01$). Ads disclosed as authored by AI and containing the funnier joke were rated higher ($M = 5.06$, $SD = 1.56$) than those with the less funny joke ($M = 3.82$, $SD = 1.89$); yet, when there was no humor, no-AI authorship received higher funniness ratings ($M = 2.68$, $SD = 1.78$)

than AI-authorship ($M = 1.53$, $SD = 1.04$, $F(1,580) = 24.54$, $p < .001$). Additionally, we found a significant main effect of authorship on perceived authorship ($F(1, 580) = 1228.52$, $p < .001$), wherein participants attributed authorship to a human author in a no-AI authorship condition ($M = 2.32$, $SD = 1.66$) and those in the AI authorship attributed it to AI ($M = 6.42$, $SD = 1.17$). These results suggest successful manipulation.

Table 4. Stimuli used in Study 3

	<i>Disclosure about AI authorship</i>	<i>Disclosure about no-AI authorship</i>
<i>Strong humor</i>		
<i>Weak humor</i>		
<i>No humor</i>		

Using ANOVA, we found significant main effects of disclosure about AI authorship ($F(1,580) = 51.48$, $p < .001$) and disclosure funniness ($F(2,580) = 10.37$, $p < .001$) on purchase intentions. Additionally, there was a significant interaction effect between the factors ($F(2,580) = 3.56$, $p = .02$), suggesting that stronger

humor mitigated algorithm aversion. More specifically, for AI authorship, the funniest disclosure led to higher purchase intentions than the less funny and serious ones ($F(2,580) = 7.81, p < .001$; see Table 5). These results support H1 and H3.

Table 5. The effects of disclosure funniness and authorship on purchase intentions (Study 3)

	<i>Disclosure about AI authorship</i> <i>M(SD)</i> <i>n = 295</i>	<i>Disclosure about no-AI authorship</i> <i>M(SD)</i> <i>n = 291</i>	<i>F-statistic</i>
<i>Highly humorous disclosure</i> <i>(n = 196)</i>	3.85(1.68) ^a	4.70(1.62) ^a	F(1,580) = 12.71, <i>p</i> < .001
<i>Less humorous disclosure</i> <i>(n = 198)</i>	3.25(1.72) ^b	3.87(1.78) ^b	F(1,580) = 6.89, <i>p</i> = .009
<i>Serious disclosure</i> <i>(n = 192)</i>	2.92(1.58) ^b	4.42(1.65) ^{ba}	F(1,580) = 38.53, <i>p</i> < .001

Note: Means with different superscripts in the same column differ significantly from each other using Bonferroni post hoc test with $p < .05$.

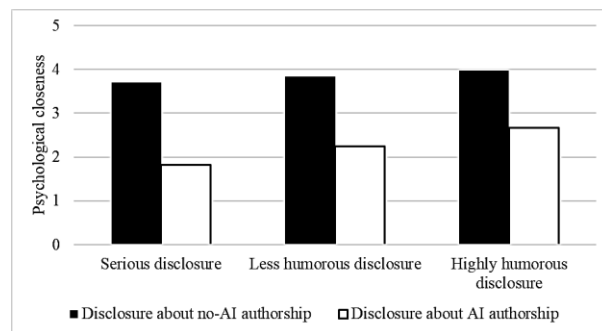


Figure 2. Interaction effect between AI authorship and disclosure funniness on psychological closeness (Study 3)

Next, we used SPSS PROCESS macro (model 7) to test hypotheses H1-3 altogether. In our analysis, authorship disclosure served as the independent variable (1 = AI authorship; 0 = no AI authorship). We conceptualized our manipulation of humor as a continuous moderator because it reflected the incremental effect of humor strength (0 = no humor, 1 = less funny joke, 2 = highly funny joke). Psychological distance (more specifically, closeness) was a mediator, while purchase intentions were our dependent variable. We found a significant interaction effect between AI

authorship disclosure and its funniness on psychological closeness ($B = .34, SE = .14, t = 2.39, p = .01$). Specifically, as the humor in the disclosure intensified, the negative impact of AI authorship on psychological distance diminished, indicating that more humorous disclosures made AI seem psychologically closer as the author of the ad (Figure 2). Furthermore, psychological closeness had a statistically significant positive effect on purchase intentions, suggesting that the greater the felt closeness towards the author of the ad, the higher the intentions to buy the advertised product ($B = .71, SE = .03, t = 18.29, p < .001$). Our analysis revealed the indirect-only mediation, which implies no omitted mediators. The index of moderated mediation was .24 (bootSE = .09) and significant (bootLLCI = .05, bootULCI = .44)³. These results yield support for H1-3.

7. Discussion

7.1. Theoretical implications

Our approach diverges from the dominant discourse in the literature that focuses on AI as a source of humor (Bower & Steyvers, 2021; Tay, Low, Ko, & Park, 2016), investigating it instead as the subject of humor. While humor directed at outgroup targets can occasionally backfire and become harmful for the joke-teller (Baumgartner, Morris, & Coleman, 2018), our findings indicate that affiliative humor about an outgroup member like AI author can reduce negative responses and translate to marketing effects that are comparable to those of human authorship.

We offer a novel explanation for how humor can alleviate algorithm aversion. As shown in Studies 2-3, humor is effective because it decreases the social dimension of psychological distance toward AI (i.e., humor increases the perceived human-likeness of AI). Our findings suggest that humor itself can serve as a practical tool for bridging psychological distance. Previous research has struggled to identify viable methods for distance reduction, despite the importance of short psychological distance in encouraging socially beneficial behaviors in areas such as climate change (Jones, Hine, & Marks, 2017) or healthcare (Kim & Nan, 2015). Therefore, our study is important as it expands the application of humor from merely eliciting entertainment to facilitating a meaningful psychological shift in how such an outgroup entity as AI is perceived.

We demonstrate that humor reverses negative reactions to AI authorship when it is sufficiently strong. Study 2 shows that humor in disclosures about AI

³ We obtained similar results for the second measure of psychological closeness. Both measures were highly correlated with the perceived humanization of the author ($r_s > .67, p_s < .001$).

authorship positively impacts purchase intentions, yet this effect becomes stronger if the humor is more amusing (as revealed in Study 3). These findings can help explain why funny disclaimers in prior research did not bring positive effects (e.g., Frederick et al., 2016).

7.2. Practical implications

Managers often struggle with complex decisions regarding content strategies for AI-generated advertising. These decisions are particularly challenging because each choice carries inherent risks that could undermine the effectiveness of their campaigns. For example, disclosing AI authorship may trigger algorithm aversion, diminishing the overall persuasiveness of the message. The disclosures themselves can lower credibility of the advertiser. On the other hand, incorporating humor into disclosures might divert consumers' attention away from the core message, potentially diluting the ad's impact or seriousness of the company. Eventually, with transparency about AI authorship becoming a legal requirement, managers face the dilemma of either risking penalties for non-disclosure or potentially weakening their marketing effectiveness.

Our research addresses each of these concerns. We show that disclosures are not necessarily harmful and that the negative effects associated with AI aversion can be mitigated by integrating highly amusing humor into them. We demonstrate that humor in disclosures helps maintain the desirable persuasiveness of advertising (e.g., in Study 3, purchase intentions in the highly humorous disclosure condition remained above the midpoint). Ultimately, our work provides actionable insights for complying with emerging transparency regulations. By framing AI authorship disclosures with humor, companies can meet legal requirements and preserve their marketing effectiveness.

While our findings equip marketers with a strategic tool to become transparent about AI use in advertising, several limitations warrant further exploration. For example, we tested our theoretical model with different products and jokes, but experimenting with a broader range of goods, services and humor types could offer additional insights.

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9. References

- Ahn, J., Kim, J., & Sung, Y. (2021). AI-powered recommendations: the roles of perceived similarity and psychological distance on persuasion. *International Journal of Advertising*, 40(8), 1366-1384.
- Baumgartner, J., Morris, J., & Coleman, J. (2018). Did the "Road to the White House Run Through" Letterman? Chris Christie, Letterman, and Other-Disparaging Versus Self-Deprecating Humor. *Journal of Political Marketing*, 17(3), 282-300.
- Bigman, Y., & Gray, K. (2018). People are averse to machines making moral decisions. *Cognition*, 181, 21-34.
- Bower, A., & Steyvers, M. (2021). Perceptions of AI engaging in human expression. *Scientific Reports*, 11, 1-7.
- Bruner, G. (2009). *Marketing Scales Handbook: A Compilation of Multi-Item Measures for Consumer Behavior & Advertising Research*. Carbondale, Illinois USA: GCBII Productions.
- Cadario, R., Longoni, C., & Morewedge, C. (2021). Understanding, explaining, and utilizing medical artificial intelligence. *Nature Human Behaviour*, 5(12), 1636-1642.
- Caron, J. (2002). From ethology to aesthetics: Evolution as a theoretical paradigm for research on laughter, humor, and other comic phenomena. *Humor: International Journal of Humor Research*, 15(3), 245-281.
- Cline, T., & Kellaris, J. (2007). The Influence of Humor Strength and Humor—Message Relatedness on Ad Memorability: A Dual Process Model. *Journal of Advertising*, 36(1), 55-67.
- Cline, T., Altsech, M., & Kellaris, J. (2003). When Does Humor Enhance or Inhibit Ad Responses? The Moderating Role of the Need for Humor. *Journal of Advertising*, 32(3), 31-45.
- Dietvorst, B., Simmons, J., & Massey, C. (2015). Algorithm Aversion: People Erroneously Avoid Algorithms after Seeing Them Err. *Journal of Experimental Psychology*, 144(1), 114-126.
- Dolen, W., Ruyter, K., & Streukens, S. (2008). The effect of humor in electronic service encounters. *Journal of Economic Psychology*, 29(2), 160-179.
- Dybala, P., Ptaszynski, M., Rzepka, R., & Araki, K. (2009). Humoroids - Conversational Agents that induce positive emotions with humor. *AAMAS (1171-1172)*. Budapest: Hungary.
- Eisend, M. (2009). A meta-analysis of humor in advertising. *Journal of the Academy of Marketing Science*, 37(2), 191-203.
- Eisend, M., van Reijmersdal, E., Boerman, S., & Tarrahi, F. (2020). A Meta-Analysis of the Effects of Disclosing Sponsored Content. *Journal of Advertising*, 49(3), 344-366.
- European Commission. (2021). *EUR-LEX*. Retrieved 10 30, 2022, from <https://eur-lex.europa.eu/legal-content>.
- Faraji-Rad, A., Samuelsen, B., & Warlop, L. (2015). On the Persuasiveness of Similar Others: The Role of Mentalizing and the Feeling of Certainty. *Journal of Consumer Research*, 42(3), 458-471.

- Ford, T. (2015). The social consequences of disparagement humor: Introduction and overview. *Humor: International Journal of Humor Research*, 28(2), 163-169.
- Frederick, D., Sandhu, G., Scott, T., & Akbari, Y. (2016). Reducing the negative effects of media exposure on body image: Testing the effectiveness of subvertising and disclaimer labels. *Body Image*, 17, 171-174.
- Goetz, J., Kiesler, S., & Powers, A. (2003). Matching robot appearance and behavior to tasks to improve human robot cooperation. *The 12th IEEE International Workshop on Robot and Human Interactive Communication*.
- Graefe, A., Haim, M., Haarmann, B., & Brosius, H. (2018). Readers' perception of computer-generated news: Credibility, expertise, and readability. *Journalism*, 19(5), 595-610.
- Granulo, A., Fuchs, C., & Puntoni, S. (2021). Preference for Human (vs. Robotic) Labor is Stronger in Symbolic Consumption Contexts. *Journal of Consumer Psychology*, 31(1), 72-80.
- Greengross, G., & Miller, G. (2011). Humor ability reveals intelligence, predicts mating success, and is higher in males. *Intelligence*, 39(4), 188-192.
- Hall, J. (2015). Sexual Selection and Humor in Courtship: A Case for Warmth and Extroversion. *Evolutionary Psychology*, 1-10.
- Hall, J. (2017). Humor in romantic relationships: A meta-analysis. *Personal Relationships*, 1-17.
- Hayes, A. (2018). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. London: The Guilford Press.
- Hernandez-Ortega, B. (2018). Don't believe strangers: Online consumer reviews and the role of social psychological distance. *Information & Management*, 55, 31-50.
- Jones, C., Hine, D., & Marks, A. (2017). The Future is Now: Reducing Psychological Distance to Increase Public Engagement with Climate Change. *Risk Analysis*, 37(2), 331-341.
- Kim, J., & Nan, X. (2015). Consideration of Future Consequences and HPV Vaccine Uptake Among Young Adults. *Journal of Health Communication*, 20(9), 1033-1040.
- Kobis, N., & Mossink, L. (2021). Artificial intelligence versus Maya Angelou: Experimental evidence that people cannot differentiate AI-generated from human written poetry. *Computers in Human Behavior*, 114.
- Li, X., & Sung, Y. (2021). Anthropomorphism brings us closer: The mediating role of psychological distance in User-AI assistant interactions. *Computers in Human Behavior*, 118.
- Lundy, D., Tan, J., & Cunningham, M. (2005). Heterosexual romantic preferences: The importance of humor and physical attractiveness for different types of relationships. *Personal Relationships*, 5(3), 311-325.
- Lynch, O. (2010). Cooking with humor: In-group humor as social organization. *Humor: International Journal of Humor Research*, 23, 127-159.
- Mahmud, H., Islam, A., Ahmed, S., & Smolander, K. (2022). What influences algorithmic decision-making? A systematic literature review on algorithm aversion. *Technological Forecasting and Social Change*, 175.
- McGraw, P., Williams, L., & Warren, C. (2014). The Rise and Fall of Humor: Psychological Distance Modulates Humorous Responses to Tragedy. *Social Psychological and Personality Science*, 5(5), 566-572.
- Menne, I., Lange, B., & Unz, D. (2018). My Humorous Robot: Effects of a Robot Telling Jokes on Perceived Intelligence and Liking. *Companion of the 2018 ACM/IEEE International Conference on Human-Robot Interaction*.
- Meyer, J. (2021). Uniting and dividing in personal interactions: Four key functions of humor in communication. In T. Ford, & M. Strick, *The social psychology of humor* (57-73). New York: Routledge.
- Mirrig, N., Stollnberger, G., Giuliani, M., & Tscheligi, M. (2017). Elements of humor: How humans perceive verbal and non-verbal aspects of humorous robot behavior. *Proceedings of the companion of the 2017 ACM/IEEE international conference on human-robot interaction*, (211-212).
- Nass, C., Steuer, J., & Tauber, E. (1994). Computers are Social Actors. *Human Factors in Computing Systems*, 4, 72-78.
- Oh, C., Lee, T., Kim, Y., Park, S., Kwon, S., & Suh, B. (2017). Us vs. Them: Understanding Artificial Intelligence Technophobia over the Google DeepMind Challenge Match. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, 2523-2534.
- Oremus, W. (2022, 06 17). *Google's AI passed a famous test — and showed how the test is broken*. Retrieved from The Washington Post: <https://www.washingtonpost.com/technology/2022/06/17/google-ai-lambda-turing-test/>
- Puzakova, M., & Kwak, H. (2017). Should Anthropomorphized Brands Engage Customers? The Impact of Social Crowding on Brand Preferences. *Journal of Marketing*, 81(6), 99-115.
- Schanck, S., Burtch, G., & Ray, G. (2021). Estimating the Impact of "Humanizing" Customer Service Chatbots. *Information Systems Research*, 32(3), 675-1097.
- Stoll, B., Jung, M., & Fussell, S. (2018). Keeping it light: Perceptions of humor styles in robot-mediated conflict. *Companion of the 2018 ACM/IEEE International Conference on Human-Robot Interaction*, (247-248).
- Tay, B., Low, S., Ko, K., & Park, T. (2016). Types of humor that robots can play. *Computers in Human Behavior*, 60, 19-28.
- Thomson, L., Vandenberg, B., & Fitzgerald, J. (2012). An exploratory study of drinkers views of health information and warning labels on alcohol containers. *Drug and Alcohol Review*, 31(2), 240-247.
- Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance: Effects on representation, prediction, evaluation, and behavior. *Journal of Consumer Psychology*, 17(2), 83-95.
- Van der Wilt, J. (2024). *11 Best AI Advertising Examples of 2024*. Retrieved 03 15, 2024, from: <https://www.datafeedwatch.com/blog/best-ai-advertising-examples>
- Warren, C., Barsky, A., & McGraw, P. (2018). Humor, Comedy, and Consumer Behavior. *Journal of Consumer Research*, 45, 529-552.
- Yeomans, M., Shah, A., Mullainathan, S., & Kleinberg, J. (2019). Making sense of recommendations. *Journal of Behavioral Decision Making*, 32(4), 403-414.