



The uncanny valley effect and the creepiness of ai generated advertising: a study on customer trust and loyalty

Dr. Pradeep Kumar Patnaik¹, Ms. Sadhika Reddy Mallidi²

¹ Research Professor, BBA Department, KLEF

² Research scholar, BBA Department, KLEF, Roll No. 2400560025

sadhvikareddymallidi@gmail.com, 9177626669

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ABSTRACT :

The aim of this study is to identify the relationship between advertising realism, AI disclosure, the human likeness of AI avatars, perceived creepiness of AI-generated ads and customer trust and brand loyalty. Primary data were gathered using a structured questionnaire on 103 social media users of India, and analysed by using chi-square test, one-way ANOVA and linear and multiple regression, the Baron and Kenny procedure, Sobel test and a bootstrap to check the mediation. The factors of human likeness ($\beta = 0.76$), realism ($\beta = 0.16$) and disclosure ($\beta = 0.11$) all significantly contributed to the variance in perceived creepiness, accounting for 82.6% of the variance. Contrary to the hypothesis, creepiness did not negatively influence the customer trust ($\beta = -0.05$, $p = 0.614$), but positively ($\beta = 0.39$, $p < 0.001$) influenced brand loyalty. Trust strongly predicted loyalty ($\beta = 0.58$, $R^2 = 0.34$). Contrary to the usual role of mediation, creepiness was a suppressor rather than a classical mediator: realism and human likeness increased creepiness, which, in turn, was associated with higher trust, to some extent counteracting their direct negative impact on trust. The results indicate that, for this sample, discomfort with AI-driven adverts that resemble humans has not led to any decrease in trust or loyalty, and that trust is the primary pathway to loyalty. Advertising agencies must navigate the moral and ethical landscape of AI-generated content with great caution, as consumers are growing increasingly aware of these new methods as AI tools raise the bar for the ethics and morality of advertising

Keywords: "AI disclosure", "customer trust", "brand loyalty", "perceived creepiness", "ai-advertising".

Introduction

With Generative AI, brands can now create realistic advertising characters, voices and scenes at a fraction of the price. These characters reach greater realism, which may lead to a feeling of discomfort that many people describe as being in the "uncanny valley" (Mori, 1970) as the affinity increases as the artificial figure becomes more human-like, and then decreases when it starts to look almost, but not quite, human. The question from advertisers' perspective is whether this discomfort hurts trust and loyalty that is essential to repeat purchase. Previous studies correlate the realism of AI-generated content, its eeriness, personalisation, privacy issues, transparency with consumer trust, acceptance and purchase intent and Indian Gen-Z audiences react with a mixture of curiosity, interest and suspicion. But the link between AI creepiness and consumers' trust and loyalty is still limited in research. This study fills this void.

Review of Literature

The impact of Generative AI in advertising on consumer trust, acceptance, purchase intention and brand responses have been shown in previous literature. Key drivers that have been identified are AI realism, perceived eeriness, personalisation, privacy concerns, and transparency. AI generated content can be creepy and potentially detract from trust, as evidenced by some findings. The gen Z Indian consumers are a mix of curiosity and suspicion when it comes to AI-powered ads. The theoretical anchor is the uncanny valley hypothesis (UCH) proposed by Mori (1970) and Mac Dorman and Ishiguro (2006) which suggests that artificial figures will be uncomfortable when they are close to but not identical to a human. From the relational perspective, Morgan and Hunt's (1994) commitment-trust theory of relationships places trust as a key antecedent of commitment-based outcomes, such as loyalty outcomes, to support H2. There remains a significant lack of research on the connection between AI creepiness, customer trust and brand loyalty.

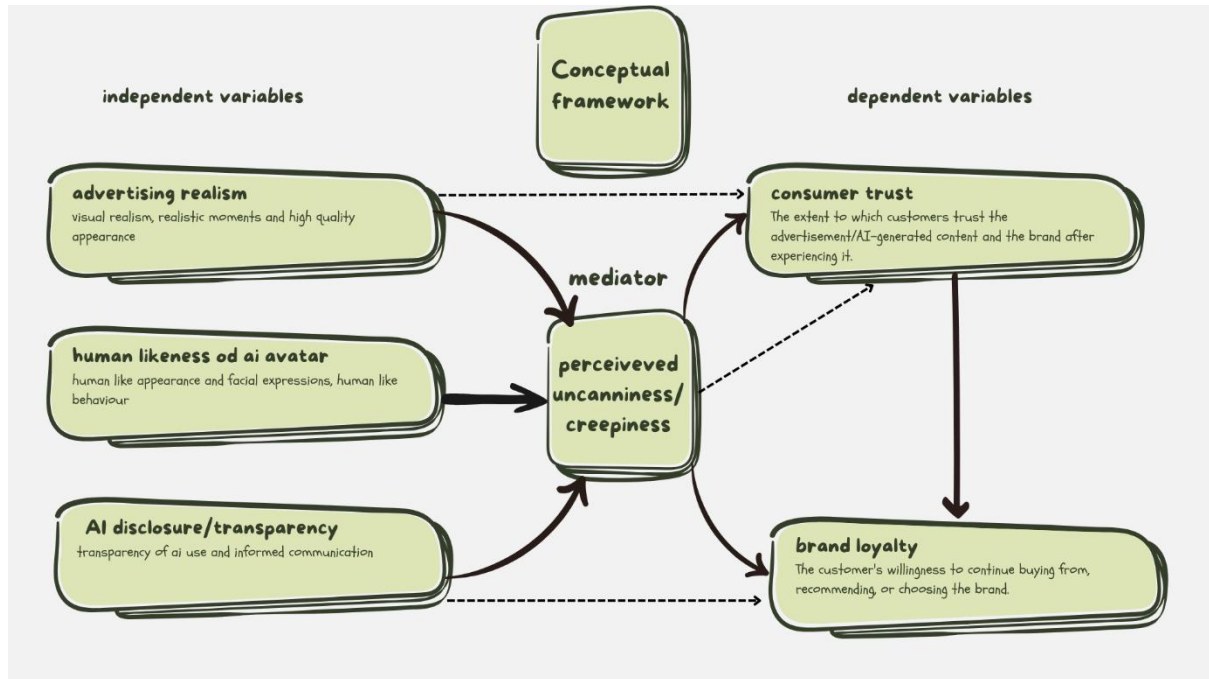
Research Gap

Much of the previous research has been centred on the uncanny valley effect and the creepiness of AI-produced content, especially when it comes to the feeling of discomfort consumers get when they see human-like AI characters or avatars. But little research has been done on advertising and customer

trust and brand loyalty in relation to this creepiness. Most previous studies focus on perceived realism, perceived human-likeness and discomfort of consumers separately and do not study the influence of all of these factors together on consumer trust in the brand and consumer loyalty. Hence, this study seeks to bridge the gap and explore the impact of uncanny valley effect of AI created ads on consumer confidence and ultimately brand loyalty.

Conceptual Framework

The framework defines the advertising realism, AI avatar and AI disclosure/transparency as independent variables. The mediator is the perceived uncanniness/creepiness, and customer trust and brand loyalty are the dependent variables, with customer trust also expected to influence brand loyalty.



Research Objectives

- To explore the impact of the realism of the AI-generated advertisements, human likeness of ad avatars and AI disclosure/transparency on perceived uncanniness.
- To investigate the effect of perceived uncanniness of AI-generated advertisements on customer trust.
- To analyse the direct impact of the nature of advertising created by AI on customer loyalty.
- To explore the mediating role of perceived uncanniness between AI generated advertisement features and consumer trust.

Research Hypotheses

- H1: The negative impact of perceived creepiness of AI-generated ads on customer trust is substantial.
- H2: Customers' trust positively influences brand loyalty.
- H3: The perception of creepiness by AI-generated ads has a strong negative impact on brand loyalty.
- H4: The realism of advertising has a significant positive impact on perceived creepiness.
- H5: the human likeness of ai has a positive effect on perceived creepiness
- H6: AI disclosure/transparency has a significant effect on perceived creepiness.
- H7: Perceived creepiness mediates the relationship between AI advertising characteristics (H7a realism, H7b human likeness, H7c disclosure) and customer trust.

7. Research Methodology

7.1 Design, sample and data collection

A descriptive, cross-sectional survey design was used. The data were gathered by using an online questionnaire (Google Forms) from 103 social media users. The sample is a convenience sample and biased towards young female respondents on Instagram and cannot be used to describe all Indian consumers.

7.2 Instrument and measures

The questionnaire consisted of 10 profile and exposure questions, such as age, gender, education, occupation, monthly income, social media use, primary advertising platform, exposure to AI advertising, type of AI advertising, and a question regarding noticing the AI disclosure, and 22 five-point Likert items (1 = strongly disagree, 5 = strongly agree). All constructs are scored on the average of the items.

contrast	Items	Content covered	Cronbach's α
Advertising realism (AR)	3	Looks realistic in terms of people and places; realistic in expression; looks real in movement	0.550
human likeness (HL)	3	Avatars resemble, act like and are difficult to tell apart from humans	0.844
AI disclosure	3	Brands should disclose; disclosure informs; transparency matters	0.755
Perceived creepiness	5	Discomfort, creepiness, unease, imperfections, difficulty relating	0.816
Customer trust	4	Trustworthy when transparent; truthful; credibility not reduced; acts in consumers' interest	0.821
Brand loyalty	4	Keep purchasing; a trusted brand; recommend; loyalty if transparent	0.761

table 1. Measuring scales and reliability. Acceptable values are considered to be 0.70 or greater (Nunnally, 1978).

The reliability of five out of six scales was satisfactory. The realism scale ($\alpha = 0.551$) was below the threshold of 0.70, which means careful interpretation of the results should be made with respect to realism.

7.3 Statistical tools

Data was analysed using Microsoft Excel (formulas for descriptives, correlation, chi-square, ANOVA and LINEST regression) and then double checked in Python. The associations between categorical variables were analysed using a chi-square test of independence, the hypotheses were analyzed using simple and multiple linear regression models, and the differences in means for constructs across groups were analysed using a one-way ANOVA. Mediation was followed by Baron and Kenny (1986) and by Sobel test and 2,000 resample percentile bootstrap. A significance level was set at $\alpha = 0.05$. Cells containing sparse numbers of subjects were combined (e.g., ages < 18 and 18 to 25; three income groups) to assure the expected cell counts or group sizes.

8. Data Analysis and Interpretation

8.1 Respondent profile

variable	Large categories(n,%)
Age	18–25: 48 (46.6%); 26–35: 24 (23.3%); 36–45: 18 (17.5%); below 18: 7; 46–55: 6
Gender	Female 72 (69.9%); Male 25 (24.3%); Prefer not to say 6 (5.8%)
Education	45 (43.7%) undergraduate, 38 (36.9%) postgraduate, 9 higher secondary, 6 doctorate and 5 other.
occupation	Student 54 (52.4%); Private employee 23 (22.3%); Business/self-employed 13; Homemaker 12; Other 1
Monthly income	Below ₹20,000: 60 (58.3%); Above ₹80,000: 19 (18.4%); ₹40,001–60,000: 13; ₹60,001–80,000: 10; ₹20,001–40,000: 1
Main platform	Instagram 68 (66.0%); Facebook 16 (15.5%); YouTube 12 (11.7%); LinkedIn 6; Other 1
Exposure to AI ads	Occasionally 50 (48.5%); Frequently 36 (35.0%); Very frequently 17 (16.5%)
Noticed AI disclosure	Yes 39 (37.9%); Not sure 38 (36.9%); No 26 (25.2%)

Table 2. Sample profile (N = 103).

8.2 Descriptive statistics and correlations

Construct	Mean	SD	1	2	3	4	5	6
1. Realism	3.64	0.69	1					
2. Human likeness	3.64	0.85	.537	1				
3. Disclosure	3.81	0.88	.130	.428	1			
4. Creepiness	3.92	0.80	.586	.895	.455	1		
5. Trust	3.48	0.87	-.361	-.154	.187	-.050	1	
6. Brand loyalty	3.32	0.70	-.249	.299	.268	.390	.582	1

Table 3. Means, standard deviations and Pearson correlations. $p < .05$, $p < .01$.

The perceived level of creepiness ($M = 3.92$ of 5) and trust ($M = 3.48$) and loyalty ($M = 3.32$) were fairly high. There was a very high correlation between creepiness and human likeness ($r = .895$) and a moderate correlation between creepiness and realism/disclosure. However, there was a strong correlation between trust and loyalty ($r = .582$) and not creepiness ($r = -.050$).

8.3 Chi-square tests

Association	χ^2	df	p	Cramér's V	Cells with expected < 5
Age group $\times$ Noticed AI disclosure	28.93	4	< .001	0.375	0%
Education $\times$ Exposure to AI ads	21.16	4	< .001	0.321	11%
Main platform $\times$ Exposure to AI ads	20.39	4	< .001	0.315	22%
Exposure to AI ads $\times$ Noticed AI disclosure	10.50	4	.033	0.226	11%

Table 4. Tests of independence: Chi-square.

Each of the four associations was important. Significant age differences emerged in respondents' awareness of AI disclosure, with 67.0% of those aged 26–35 having noticed it, compared to 31.0% of those aged 25 or less and 25.0% aged 36 or over. There were differences across education and platform: all of those who "very frequently" watched ads used Instagram (11) or Facebook (6) and none used YouTube, LinkedIn or other platform. The percent of respondents who occasionally noticed a disclosure was highest for those who had seen AI ads (52%). Effect size ranged from moderate (0.23 to 0.38) to high. Each test had a small number of cells with expected counts below the usual 20% guideline, except the platform test (22%); which is just over the guideline.

8.4 One-way ANOVA

Dependent variable by grouping	F(df)	p	η^2	Group means
Creepiness by disclosure noticed 7.76 (2, 100)	7.76(2,100)	< .001	0.134	Yes 3.55; No 4.18; Not sure 4.13
Creepiness by daily social media use	9.20 (2, 100)	< .001	0.155	1–2 h 4.25; 2–4 h 4.10; 4+ h 3.49
Trust by income group	13.45 (2, 100)	< .001	0.212	< ₹20k 3.67; ₹20–60k 3.95; > ₹60k 2.85
Trust by main platform	5.81 (2, 100)	.004	0.104	Instagram 3.34; Facebook 3.36; YouTube/LinkedIn/Other 4.07
Loyalty by exposure to AI ads	16.77 (2, 100)	< .001	0.251	Occasionally 3.58; Frequently 3.30; Very frequently 2.59
Loyalty by income group	12.82 (2, 100)	< .001	0.204	< ₹20k 3.30; ₹20–60k 4.04; > ₹60k 3.00

Table 5. One-way ANOVA results.

The respondents who had seen an AI disclosure saying there was less creepiness than those who had not or weren't sure. Loyalty and trust also declined with the increase in number of exposure to AI ads ($\eta^2 = 0.251$ and the highest being with the above ₹60,000 group), and income also proved to have influence on both the variables with the lowest trust the above ₹60,000 group and the highest loyalty the group of above ₹20,000 to ₹60,000. Levene's test showed that there were unequal variances over several comparisons, so the Kruskal-Wallis test confirmed all results except for creepiness by social media use ($p = .154$) and should be considered tentative results. Post hoc pairwise comparisons were not run.

8.5 Regression analysis

Model	Predictor	B	SE	β	t	p	R ²
H1: Trust	Creepiness	-0.055	0.108	-0.050	-0.51	.614	.003
H2: Loyalty	Trust	0.465	0.065	0.582	7.19	< .001	.338
H3: Loyalty	Creepiness	0.340	0.080	0.390	4.25	< .001	.152
Obj. 1: Creepiness	Realism	0.189	0.058	0.164	3.26	.002	.826
	Human likeness	0.718	0.052	0.760	13.83	< .001	
	Disclosure	0.099	0.043	0.109	2.33	.022	
Obj. 3: Loyalty	Realism	-0.564	0.099	-0.560	-5.71	< .001	.333
	Human likeness	0.457	0.089	0.556	5.17	< .001	
	Disclosure	0.082	0.073	0.104	1.13	.261	
Trust (total effects)	Realism	-0.445	0.136	-0.354	-3.27	.002	.189
	Human likeness	-0.080	0.122	-0.078	-0.66	.514	
	Disclosure	0.265	0.101	0.266	2.63	.010	

Table 6. Regression results. Models for Objective 1 and 3 were $F(3, 99) = 156.51$ and 16.51 (both $p < .001$). VIF values for realism, human likeness and disclosure were 1.24, 1.72, and Durbin–Watson values were 1.92 and 1.13, respectively.

The creepiness factor explained less than 1% of the variance in trust and it was not supported in H1. There is a significant level of support for H2 as trust accounts for 33.8% of the variance in loyalty. The other significant factor of creepiness (in the hypothesized direction) on loyalty was rejected. Objective 1 had high support: Human likeness was the most common factor that created creepiness, followed by realism and disclosure. For loyalty, realism decreased loyalty, and human likeness increased it in the loyalty model. The Durbin–Watson value for that model is 1.13 which indicates some residual autocorrelation present, and the standard errors should be interpreted with caution.

8.6 Mediation analysis

path	a X to CR	b CR to TR	C total	c' direct	Indirect a×b	Sobel z (p)	Bootstrap 95% CI
Realism → CR → Trust	0.676***	0.268*	-0.454***	-0.635***	0.181	2.09 (.037)	[0.080, 0.359]
Human likeness → CR → Trust	0.845***	0.478*	-0.159	-0.563*	0.404	2.01 (.044)	[0.002, 0.819]
Disclosure → CR → Trust	0.416***	-0.186	0.186	0.263*	-0.077	-1.50 (.134)	[-0.167, -0.015]

Table 7. Mediation results (unstandardised coefficients; CR = creepiness; TR = trust). * $p < .05$, *** $p < .001$.

The indirect effect, via creepiness, was significant, but with the opposite sign to the direct effect, for realism and for human likeness. The direct negative effect of realism and human likeness on trust was partially offset by creepiness that increased trust when the other characteristics were

controlled, which was statistical suppression (inconsistent mediation), rather than the traditional partial mediation. For disclosure, even though the Sobel test was not significant the bootstrap interval did not contain zero, the evidence is mixed. Judgement of human likeness and creepiness are correlated, $r = .895$ (VIF is approximately 5 in the combined model), which means that the human likeness estimates are unstable.

A summary of hypothesis tests is provided.

Hypothesis	Result
H1: Creepiness → Trust (negative)	Not supported ($\beta = -0.05$, $p = .614$)
H2: Trust → Brand loyalty (positive)	Supported ($\beta = 0.58$, $p < .001$)
H3: Creepiness → Brand loyalty (negative)	Rejected: significant, but positive ($\beta = 0.39$)
H4: Realism → Creepiness (positive)	Supported ($\beta = 0.16$, $p = .002$)
H5: Human likeness → Creepiness (positive)	Supported ($\beta = 0.76$, $p < .001$)
H6: Disclosure → Creepiness	Supported, positive ($\beta = 0.11$, $p = .022$)
H7a: Realism, mediation via creepiness	Supported as suppression (Sobel $p = .037$)
H7b: Human likeness, mediation via creepiness	Supported, but unstable (Sobel $p = .044$);
H7c: Disclosure, mediation via creepiness	-Not supported by Sobel ($p = .134$)

Table 8. Hypothesis decisions.

9. Findings

- The most powerful factor for perceived creepiness is the human likeness of AI avatars, followed by realism and disclosure. There is 82.6 % overlap in the three characteristics in explaining creepiness.
- Perceived creepiness did not significantly decrease customer trust and was positively associated to brand loyalty.
- Enhancing customer trust is the key determinant of brand loyalty.
- Human likeness is an inverse influence on trust and loyalty level, while realism directly reduces trust and loyalty.
- Creepiness is a suppressor towards realism and human likeness approaches to trust.
- Respondents' experiences of AI advertising are linked to noticing an AI disclosure, age, education, platform, and income and frequency of exposure.
- Respondents who view AI advertising often (42%) are the least loyal, while those who view it very rarely are the most loyal (41%).

10. Discussion

The close association between human likeness and realism with creepiness supports the first half of the uncanny valley logic: The more realistic the advertising characters of the AI the more uncomfortable the users feel. That unease didn't exist in the second half: no doubt about it, they lost their trust and loyalty. The first reading is habituation: If you are a heavy user of social media, you may have become accustomed to the synthetic content and you sense discomfort but not impact brand judgments. The other is measurement: The creepiness items ask about one's discomfort with AI characters in general, while the trust and loyalty items are conditional on transparency and trusted brands, which means that people might be rating the brands that they already trust. This positive creepiness–loyalty relationship may also be driven by those most aware of AI advertising having the highest brand loyalty, being the most in tune with the algorithm. These explanations have not been tested here, but should be looked into in future research.

The result of the disclosure is susceptible to misinterpretation. The disclosure scale indicates the significance respondents attribute to transparency, with a positive correlation to creepiness indicating that those who find it more uncomfortable also believe that brands need to disclose AI use, highlighting the need for a tailored approach. A positive association with creepiness suggests that the more uncomfortable people feel, the more significant they believe disclosure is to brands, indicating the need for a tailored approach. Those who did notice a disclosure, however, reported a lower level of creepiness, which aligns with disclosure reducing the creepiness of AI advertising, but cannot prove causation.

11. Implications

Beware that a lag of comfort with realistic AI characters will not necessarily lead to decreased trust or loyalty; discomfort in the case of realism was not

a costly consequence of creepiness in this sample.

Respondents have expressed a strong demand for transparency in AI disclosure, and this is linked to clear and visible disclosure.

An advertisement that is realistic came with a cost - it directly reduced trust and loyalty, and higher income and very frequent viewers had the lowest trust and loyalty. Brands should test out a level of realism on their audience prior to mass campaigns.

Trust is the best path to loyalty, so marketers must build trust first.

13. Conclusion

AI-generated advertising characters that look and behave more like real people, and that appear more realistic, are perceived as more creepy. In this sample, however, this creepiness effect did not result in lower satisfaction and trust in the brand was not negatively correlated with the creepiness effect. In turn, trust was the best predictor of loyalty. Thus, creepiness seems to be a genuine but not yet disruptive response for these customers, and the link between the realism of AI-generated imagery, trust and loyalty is more nuanced than a direct correlation from discomfort to loss of loyalty. Brands need to combine realism with transparency and invest in trust.

REFERENCES

- Campbell, C., Plangger, K., Sands, S., Kietzmann, J., & Bates, K. (2022). How Deepfakes and Artificial Intelligence Could Reshape the Advertising Industry: The Coming Reality of AI Fakes and Their Potential Impact on Consumer Behavior. *Journal of Advertising Research*, 62(3), 241–251. <https://doi.org/10.2501/JAR-2022-017>
- Lim, C.V.; Zhu, Y.-P.; Omar, M.; Park, H.-W. Decoding the Relationship of Artificial Intelligence, Advertising, and Generative Models. *Digital* **2024**, 4, 244–270. <https://doi.org/10.3390/digital4010013>
- Mushtaq, MUHAMMAD, A Review of Artificial Intelligence in Advertising and Marketing Visuals, Through a Visual Communication Design Lens (April 02, 2026). Available at SSRN: <https://ssrn.com/abstract=6620839> or <http://dx.doi.org/10.2139/ssrn.6620839>
- Zhang, L.; Hur, C. The Impact of Generative AI Images on Consumer Attitudes in Advertising. *Adm. Sci.* **2025**, 15, 395. <https://doi.org/10.3390/admsci15100395>
- Peter, R., Roshith, V., Lawrence, S., Mona, A. E., Narayanan, K. B., & Yusaira, F. (2025). Gen AI - Gen Z: Understanding Gen Z's emotional responses and brand experiences with Gen AI-driven, hyper-personalized advertising. *Frontiers in Communication*, 10, Article 1554551. <https://doi.org/10.3389/fcomm.2025.1554551>
- 2CHI EA '26: Proceedings of the Extended Abstracts of the 2026 CHI Conference on Human Factors in Computing Systems Article No.: 895, Pages 1 – 5 <https://doi.org/10.1145/3772363.3799200>
- Gu, C.; Jia, S.; Lai, J.; Chen, R.; Chang, X. Exploring Consumer Acceptance of AI-Generated Advertisements: From the Perspectives of Perceived Eeriness and Perceived Intelligence. *J. Theor. Appl. Electron. Commer. Res.* **2024**, 19, 2218–2238. <https://doi.org/10.3390/jtaer19030108>
- Jarsve, T., Sienkiewicz, B., Loerakker, M. B., Woźniak, P. W., & Niess, J. (2026). The nuances of creepiness: A systematic literature review of creepy technology. In *CHI '26: Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems* (pp. 1–28). Association for Computing Machinery. <https://doi.org/10.1145/3772318.3791030>
- Baek, T. H., Kim, J., & Kim, J. H. (2026). Effect of disclosing AI-generated content on prosocial advertising evaluation. *International Journal of Advertising*, 45(1), 171–192. <https://doi.org/10.1080/02650487.2024.2401319>
- Møller, A. G., Romero, D. M., Jurgens, D., & Aiello, L. M. (2026). The impact of generative AI on social media: An experimental study. *Scientific Reports*, 16, Article 9376. <https://doi.org/10.1038/s41598-026-40110-8>