

Programmatic creative: AI can think but it cannot feel

Marat Bakpayev¹, Tae Hyun Baek², Patrick van Esch³
and Sukki Yoon⁴

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Abstract

The authors conduct two studies to examine artificial intelligence (AI) in creative programmatic contexts. Findings indicate that consumers have equally favorable attitudes toward human-created and AI-created cognitive-oriented advertising, but form lower evaluations of AI-created emotion-oriented creative content. Programmatic creative ads are effective for rational appeals and utilitarian products, but are ineffective for emotional appeals and hedonic products. The studies indicate that human rather than AI input is needed for creating emotion-oriented advertisements.

Keywords

Artificial intelligence, Emotional/rational, Hedonic/utilitarian, Programmatic creative

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1. Introduction

Spike Jonze's futuristic *Her* (2013) tells a fanciful story about a professional letter writer Theodore Twombly and an artificially intelligent virtual assistant Samantha. Mr. Twombly specializes in something intrinsically human - he composes emotionally rich letters for clients of a company called *Beautiful Handwritten Letters*. It appears though that Samantha, a humanlike agent, can be equally creative. Samantha is able to similarly write charming, poetic, heartfelt letters. Although the story is science-fiction, individuals and companies are increasingly using artificial intelligence (AI) systems ranging from basic email auto-complete and Grammarly to more sophisticated creative tasks; AI is composing news articles (Carter, 2013), creating paintings (Moura, 2016), and completing unfinished Schubert or Beethoven symphonies (Foulkes, 2019; Love, 2018).

AI can create ads. For example, Lexus used AI to write an ad to evoke emotional responses based on learning acquired from the past 15 years of Cannes Lion-winning luxury automobile ads (Griner, 2018). Similarly, McCann Worldgroup Japan found that consumers preferred AI-created over human-created ads and thus the company created the first AI creative director position to create ads based on data from the past 10 years of annual festival awards from the All Japan Radio and Television Commercial Confederation (Doland, 2016).

Progressively, digital marketers and advertisers are paying more attention to AI (Black and Van Esch, 2020; de Ruyter, Keeling, and Ngo, 2018; Dwivedi et al., 2019; Kaplan and Haenlein, 2019; Power, 2017; Schmitt, 2019; V. Kumar, Rajan, Venkatesan, and Lecinski, 2019). Indeed, more than 51% of marketers are using AI, a percentage that is expected to increase (Business Insider Intelligence, 2018), while as many as 91.6% of C-level executives are investing in AI (Bean, 2019). Generally, the trends are increasingly technology-enabled (Van Esch and Mente, 2018; Van Esch et al. 2019).

Numerous researchers began investigating AI in marketing-related contexts (Castelo et al., 2019; Davenport and Ronanki, 2018;

Davenport et al., 2019; Fox, 2018; Haenlein and Kaplan, 2019; Huang and Rust, 2018; Huang et al., 2019; Kietzmann et al., 2018; Longoni et al., 2019; V. Kumar et al., 2019). In an in-depth overview of current AI research, Davenport et al. (2019) developed a multidimensional framework to show various intelligence levels and task types that will be embedded in robotic technology to significantly impact marketing strategies and consumer behavior. Huang and Rust (2018) and Huang et al. (2019) identified mechanical and analytical types of intelligence based on data, and intuitive and empathetic types of intelligence based on emotions, understanding, and experience.

AI is currently able to perform data-based tasks, but not feeling-based tasks based on human understanding and experience. Theoretically, in the future, humans might perform emotional tasks that require feelings, while AI performs cognitive tasks that require thinking. Such theorization is proposing “thinking economy” vs. “feeling economy,” where AI does the “thinking” but humans do the “feeling” (Huang et al., 2019). However, researchers have rarely examined consumer perceptions and attitudes in response to AI-created ads. Consequently, we conducted two studies to fill the gap and identify the psychological mechanisms that drive

¹Labovitz School of Business & Economics, University of Minnesota Duluth, Duluth, MN, USA

²Department of Integrated Strategic Communication, College of Communication and Information, University of Kentucky, Lexington, KY, U.S.A

³Auckland University of Technology, Auckland Central, New Zealand

⁴Marketing Department, College of Business, Bryant University, Smithfield, RI, USA

Corresponding author:

Marat Bakpayev, Labovitz School of Business & Economics, University of Minnesota Duluth, 335E LSBE, 1318 Kirby Drive, Duluth, MN 55812, USA.
Email: mbakpaye@umn.edu

people to accept or reject AI-created advertisements. Recognizing that AI touches nearly all aspects of advertising, we ask the following research question: What are consumer responses to AI-generated creative work?

We particularly focus on AI used in the context of *programmatic creative* (Busch, 2016; Celtra, 2015; Chen et al., 2019). By definition, programmatic creative refers to algorithm and data-driven process of using AI technologies that add speed, scale, and automation to the creative process. It enables digital advertisers to produce dynamic ads and optimize creative message design and testing (Lennon, 2017). Programmatic creative is a component of programmatic advertising, where based on data AI can produce content such as natural language generation, image generation, or speech generation (Chen et al., 2019; Kietzmann et al., 2018).

First, we compared consumer perceptions of AI- and human-generated rational and emotional advertising appeals. Next, we compared consumer perceptions of humanlike (vs. non-humanlike) AI-generated ad for hedonic or utilitarian products. Rational/emotional appeals and hedonic/utilitarian products are common in advertising (Seo et al., 2016). Our intention was to compare reactions to both directly for human (vs. AI) and humanized AI (vs. non-humanized); the argument for latter is based on the idea that AI is already creating ads - but if an ad is created humanlike and it is not disclosed that is developed by AI, consumers may not be aware of the origins. Our study results concur that consumers tend to use human reference points for judging AI-generated ads (Andre et al., 2018). That is, consumers have equally positive perceptions regarding human-created and AI-created ads that appeal to thinking, but form lower evaluations of AI-created ads that appeal to feeling. Thus consumers have negative perceptions of AI agents (vs. human agents) and non-humanized AI (vs. humanized AI) creative to convey emotional appeals and hedonic products. Instead, AI-enabled programmatic creative ads are more preferred for utilitarian products and rational appeals and less preferred for hedonic products and emotional appeals.

Our contributions extend inquiry regarding the “feeling economy” (Huang et al., 2019), the psychology of bot-sourcing (Waytz and Norton, 2014), and the emerging conversation on AI in advertising, especially on emerging programmatic creative (Chen et al., 2019). We provide early empirical evidence of effects of AI-generated versus human-generated creative advertising content.

2. Theoretical background

2.1. Artificial Intelligence (AI) and programmatic advertising

AI systems interpret and learn from data and “use those learnings to achieve specific goals and tasks through flexible adaptation” (Kaplan and Haenlein, 2019, p. 17). Most current AI systems are generally considered “weak” in being inferior to human intelligence, but an evolutionary perspective indicates that AI will become “strong,” perhaps equal or even superior. AI has been classified across various intelligence levels (Davenport and Kirby, 2016; Huang and Rust, 2018), so that analytical AI comprises cognitive intelligence and humanized AI comprises emotional intelligence, social intelligence, and artistic creativity (Kaplan and Haenlein, 2019). Huang and Rust (2018) identified mechanical, analytical, intuitive, and empathetic types of intelligence. Generally, humanized AI is expected to attain higher emotional and creative aspects in the future.

AI-based advertising has been defined as “consumer-centered, data-driven, and algorithm-mediated brand communication” (Li, 2019, p. 333). Marketing studies are now focusing on AI’s general

effects (Davenport et al., 2019), or specific effects in services (Huang and Rust, 2018), customer relationship management (V. Kumar et al., 2019), advertising (Chen et al., 2019; Li, 2019; Mogaji et al., 2020; Qin and Jiang, 2019), consumer insight development, creative development, media planning, buying, and advertising evaluations (Qin and Jiang, 2019).

Chen et al. (2019) specifically examined *programmatic advertising*, in which consumers view automatically served digital ads when they open websites “in real time based on individual ad impression opportunities” (Bardowicks and Busch, 2013). Programmatic advertising, as noted by Chen et al. (2019), consists of two elements: programmatic buying and programmatic creative. Historically, programmatic advertising, narrowly focused on “buying,” which overlooks creative aspects (Chen et al., 2019). For programmatic buying, publishers use automatic supply side platforms (SSPs), real-time bidding systems through demand-side platforms (DSP), and data management platforms (DMPs) that provide consumer demographics, locations, and interests. The analytics check advertisers’ selection criteria, choose the higher bids, and then deliver ads to targeted consumers. In other words, programmatic buying automates ad placement.

Programmatic creative automates ad creation. The process goes as follows. Programmatic creative platforms (PCPs) include dynamic creative optimization (DCO) and programmatic advertisement creation (PAC). DCO automatically assembles ads from multiple components, allowing automatic creative granular customization for various audiences. PAC and DCO generate optimized designs. PCP then communicates with content management platforms (CMPs) that then aggregates all created creative elements.

However, researchers have rarely explored the content-creation aspect of programmatic advertising. Chen et al. (2019) argued that programmatic creative is limited because it is in its early stages, but it is becoming closer to mimicking reality. We argue that current research has left gaps in understandings about future directions for AI in developing creative work.

2.2. Cognition versus emotion-oriented tasks

AI is used as a substitute for human decision makers in tasks such as recruitment (Black and Van Esch, 2020; Van Esch and Black, 2019; Van Esch et al., 2019), organizational decision-making (Shrestha et al., 2019), and bot-sourcing (Waytz and Norton, 2014), but people tend to be more psychologically comfortable with machine-made recommendations for cognition-oriented rather than emotion-oriented tasks (Waytz and Norton, 2014).

Their psychological comfort with AI used for cognitive tasks comes from the human tendency to associate agency with human capacities for thought, and to associate experience with human capacities for feelings and emotions (Waytz and Norton, 2014). Machines cannot have conscious emotional experiences, so consumers perceive AI as having capacities for cognition but not for emotion. Emotions are the distinguishing borderline; machines “are intelligent, but they don’t love or hate” (Turkle, 2005, p. 63). Humanlike AI provides information cues in an ad by attaching human qualities (e.g., naming Alexa) to the AI and showing human-like appearance. But non-humanlike AI does not have any human characteristics but becomes more machine-like (e.g., mechanical voice).

We use mind perception frame for explaining reactions to AI programmatic creative. We theorize that when machines perform work that is innately human or emotion-oriented, people will form negative perceptions because they perceive that AI lacks the capacity to experience or feel. Consequently, they will prefer human agents over AI agents for transmitting hedonic appeals to promote hedonic

products, but will accept ads using AI agents to promote utilitarian products and have rational appeals. Formally, we hypothesize:

H1. Consumers will react more favourably when human agents rather than AI agents appeal to emotions; however, consumers will react equally when human agents and AI agents appeal to cognitions.

H2. Consumers will react more favourably when humanlike AI rather than non-humanlike AI promote hedonic products; however, consumers will react equally when humanlike AI and non-humanlike AI promote utilitarian products.

Study 1

3. Method

3.1. Participants and design

At a university in the United States, 205 undergraduate students (39.5% women, $M_{age} = 19.7$) were randomly assigned to one of four experimental conditions in a 2 (agent type: AI vs. human) \times 2 (product appeal: rational vs. emotional) between-subjects designed study. The aim of the study was to compare human vs machine and measure attitudes.

Participants first read scenarios about an AI agent (Sira) or a human agent (Sara) advising consumers about types of hair and skin conditions and recommending a shampoo called *LivSo Hair Care*. The same photo of an agent was used in both conditions. Sara, portrayed as a dermatologist, indicated that she created the shampoo to counter scalp irritation that leads to hair loss, embarrassment, and emotional stress. Sira was portrayed as an AI agent that analysed data to design the new shampoo to counter the embarrassment and emotional stress of hair loss. Next, participants viewed and evaluated messages featuring emotional or rational appeals:

“Searching for a new shampoo? Issues with scalp irritation? Let me tell you about this new shampoo I created called *LivSo Hair Care*. It’s not like your ordinary shampoos - no, this one goes beyond the call of duty. Why use your old shampoo when there is emotional (practical) power of new *LivSo Hair Care*. Emotional (Rational) solution!”

3.2. Measures

Participants indicated ad attitudes on three, seven-point scale items (“The ad appeals to me,” “The ad is attractive to me,” and “I like the ad,” anchored by 1 = *strongly disagree*; 7 = *strongly agree*, $\alpha = 0.92$). They also responded to two manipulation checks (see Malaviya and Brendl, 2014 for a similar example of double manipulation). First, they indicated which agent type made the ad (1 = machine, 7 = human) and then indicated their perceptions about the manipulation (“How emotional or rational was the product appeal?”), anchored by 1 = *very emotional* and 7 = *very rational*).

3.3. Results

3.3.1. Manipulation check. Participants in the AI agent condition ($M_{AI} = 3.36$, $SD = 1.83$) reported that the ad was more machine-like in comparison with participants in the human agent condition ($M_{Human} = 4.94$, $SD = 1.39$; $t = 6.97$, $p = .000$). Our independent samples t -test ($t = 3.02$, $p = .003$) showed that participants reported that the rational appeal ($M_{Rational} = 4.42$, $SD = 1.05$) focused on more being rational than the emotional appeal ($M_{Emotional} = 3.94$, $SD = 1.22$).

3.4. Ad attitude

A 2 (agent type: AI vs. human) \times 2 (product appeal: rational vs. emotional) ANOVA revealed that agent type had a significant main effect on ad attitude ($F(1, 201) = 5.27$, $p = .014$); participants exposed to the human agent ($M_{Human} = 4.68$, $SD = 1.21$) had more favourable ad attitudes than those exposed to the AI agent ($M_{AI} = 4.29$, $SD = 1.21$). However, the main effect of the product appeal was not significant ($F(1, 201) = 0.33$, $p = .569$). As predicted, a significant two-way interaction occurred ($F(1, 201) = 6.08$, $p = .014$). Follow-up comparisons showed that in the emotional appeal condition, participants exposed to the human agent ($M_{Human} = 4.93$, $SD = 1.13$) reported more favourable ad attitudes than those exposed to the AI agent ($M_{AI} = 4.13$, $SD = 1.40$; $F(1, 201) = 11.39$, $p = .002$). No significant difference occurred in the rational appeal condition ($M_{Human} = 4.42$, $SD = 1.25$; $M_{AI} = 4.45$, $SD = 0.99$; $F(1, 201) = 0.02$, $p = .897$).

3.5. Discussion

In study 1, we found support for our prediction. Participants exposed to emotional appeals from a human rather than an AI agent had more favourable attitudes toward the ad. Under rational appeals, the agent type effect was absent.

Study 2

3.6. Method

3.6.1. Participants and design. At a university in the United States, 217 undergraduate students (37.5% women, $M_{age} = 19.6$) were randomly assigned to a 2 (AI feature: humanlike vs. non-humanlike) \times 2 (product benefit: utilitarian vs. hedonic) between-subjects design experiment. We compared humanlike AI (vs. non-humanlike AI). We also added an additional measure: purchase intention.

Participants were exposed to a scenario about an AI-bot that had purportedly scripted a new shampoo advertising message. In the humanlike (non-humanlike) AI condition, participants were told that the ad was written by a humanlike (non-humanlike) AI agent. Next, they viewed and evaluated the following ad message using hedonic or utilitarian appeals:

Searching for a new shampoo? Looking for soft hair (effective cleansing)? I use a new shampoo called *Lelia’s Hair Care*, which goes beyond ordinary shampoos to provide softening (cleansing) power. Use *Lelia’s Hair Care* for soft and silky hair (effective cleansing)!

3.7. Measures

We used the ad attitude measure from Study 1. To measure purchase intentions, participants indicated their likelihood of purchasing the product on a seven-point scale (1 = *strongly disagree*; 7 = *strongly agree*). To test the manipulation checks, participants indicated their perceptions regarding whether the text of the AI-created ad appeared humanlike on a 7-point scale (1 = *not at all*, 7 = *extremely*). Next, they rated whether the advertised products offered hedonic (= 1) or utilitarian benefits (= 7).

3.8. Results

3.8.1. Manipulation check. Participants in the humanlike AI condition ($M_{Humanlike} = 4.57$, $SD = 1.38$) reported that the condition was more humanlike in comparison with participants in the non-humanlike AI condition ($M_{Non-humanlike} = 3.39$, $SD = 1.47$; $t = 6.07$, $p = .000$). Our

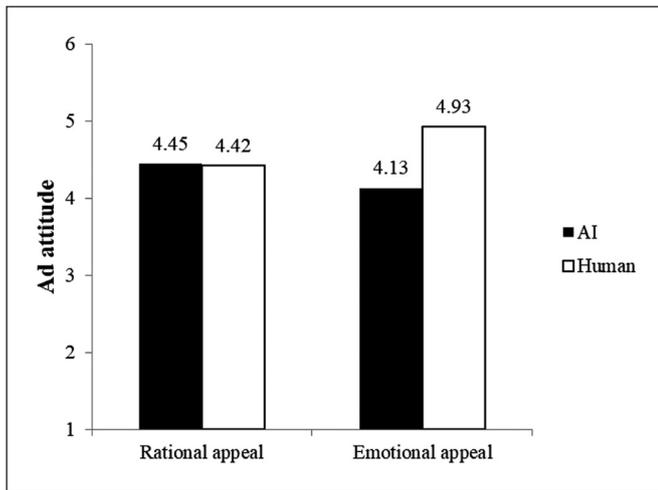


Fig. 1. Study 1: Ad attitude according to appeal and agent type.

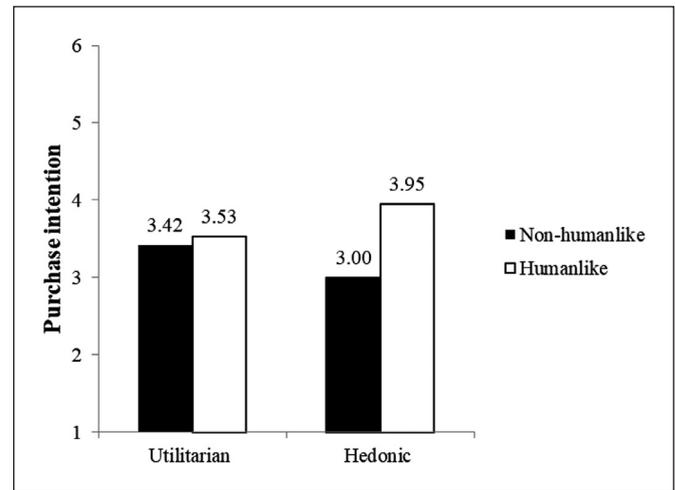


Fig. 3. Study 2: Purchase intention according to product benefit and AI humanlike-ness.

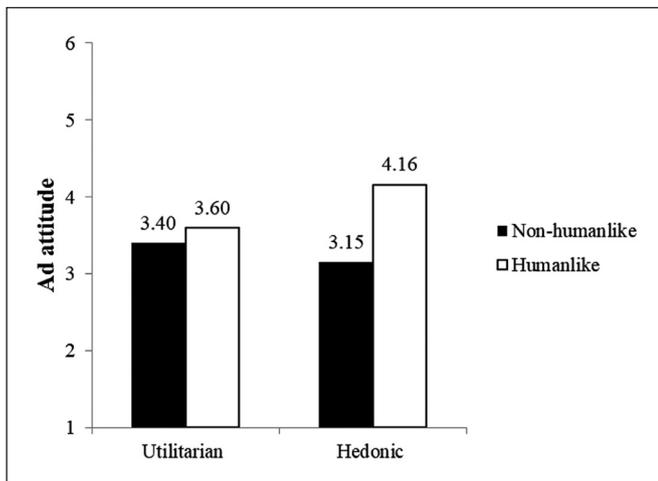


Fig. 2. Study 2: Ad attitude according to product benefit and AI humanlikeness.

independent samples *t*-test ($t = 3.88, p = .000$) showed that participants reported that the product using the utilitarian appeal ($M_{Utilitarian} = 4.52, SD = 1.18$) focused on more utilitarian benefits than the product using hedonic appeals ($M_{Hedonic} = 3.78, SD = 1.61$).

Fig. 1-3

3.9. Ad attitude

A 2 (AI feature: humanlike vs. non-humanlike) \times 2 (product benefit: utilitarian vs. hedonic) ANOVA revealed a significant main effect of humanized AI on ad attitude ($F(1, 213) = 10.27, p = .002$); participants exposed to the humanlike AI condition ($M_{Humanlike} = 3.84, SD = 1.35$) had more favourable ad attitudes than those exposed to non-humanlike AI ($M_{Non-humanlike} = 3.27, SD = 1.41$). However, ad appeal had a nonsignificant main effect ($F(1, 213) = 0.66, p = .419$). As predicted, a significant two-way interaction effect occurred ($F(1, 213) = 4.60, p = .033$). Follow-up comparisons showed that in the hedonic appeal condition, participants exposed to the ad created by a humanlike AI reported more favourable ad attitudes than those exposed to the ad created by a non-humanlike AI ($M_{Humanlike} = 4.16, SD = 1.19$; $M_{Non-humanlike} = 3.15, SD = 1.48$;

$F(1, 213) = 13.86, p = .000$). No significant difference occurred for the utilitarian appeal ($M_{Humanlike} = 3.60, SD = 1.43$; $M_{Non-humanlike} = 3.40, SD = 1.33$; $F(1, 213) = 0.58, p = .450$).

3.10. Purchase intention

A 2 (AI feature: humanlike vs. non-humanlike) \times 2 (product benefit: utilitarian vs. hedonic) ANOVA revealed a main effect of humanlike AI ($F(1, 213) = 7.90, p = .005$). Participants exposed to the humanlike AI condition ($M_{Humanlike} = 3.72, SD = 1.36$) had stronger purchase intentions than those exposed to the non-humanized AI ($M_{Non-humanlike} = 3.20, SD = 1.41$). However, no significant main effect occurred for ad appeal ($F(1, 213) = 0.00, p = .991$). As predicted, a significant two-way interaction occurred ($F(1, 213) = 5.03, p = .026$). Follow-up comparisons revealed that in the hedonic appeal condition, participants exposed to the ad created by a humanlike AI reported stronger purchase intentions in comparison with those exposed to the ad created by a non-humanlike AI ($M_{Humanlike} = 3.95, SD = 1.17$; $M_{Non-humanlike} = 3.00, SD = 1.48$; $F(1, 213) = 12.36, p = .001$). For the utilitarian appeal condition, no significant difference occurred ($M_{Humanlike} = 3.53, SD = 1.48$; $M_{Non-humanlike} = 3.42, SD = 1.30$; $F(1, 213) = 0.17, p = .686$).

3.11. Moderated mediation

To test whether ad appeal moderates the indirect effect of humanlike AI on purchase intentions through ad attitudes, we performed a moderated mediation analysis with 50 000 bootstrapped samples (Model 8, SPSS PROCESS macro; Hayes, 2013). Ad attitude significantly mediated the effect of the ad created by humanlike versus non-humanlike AI on purchase intentions among participants exposed to hedonic appeals ($B = 1.01, SE = 0.27, 95\% CI = .39$ to 1.21) but not those exposed to utilitarian appeals ($B = 0.20, SE = 0.26, 95\% CI = -.26$ to 0.58).

3.12. Discussion

Study 2 further supports our predictions by revealing that the humanlike AI-generated ad positively influences ad attitudes and purchase intentions for participants exposed to hedonic appeals, but not for those exposed to utilitarian appeals. Importantly, ad attitude mediates the impact of humanlike AI in the hedonic appeal condition but not in the utilitarian condition.

4. General discussion

4.1. Theoretical contributions and implications of the findings

Across two studies of more than 400 respondents, we find support for our hypotheses that emotional/rational appeals and hedonic/utilitarian products affect attitudes toward ads and purchase intentions. We also show that when humanlike AI agents create ads with hedonic appeals, ad attitudes mediate the effect on purchase intentions. Specifically, consumers accept human- or AI-created cognition-oriented ads, but form lower evaluations of AI agent-created emotionally oriented advertising. Moreover, consumers favor ads using human rather than AI agents for presenting emotional appeals. Agent type has no effect for presenting rational appeals. Finally, humanlike rather than non-humanlike AI-generated ads strongly and positively impact ad attitudes and purchase intentions for consumers exposed to hedonic appeals but not utilitarian appeals.

4.2. Theoretical implications

Our research makes several important theoretical contributions. First, we contribute to the AI-enabled advertising literature by demonstrating that most consumers prefer human-created ads for emotional and hedonic appeals. We suggest that organizations should avoid AI for programmatic creative for emotional or hedonic appeals, when products are positioned on a deeply personal level and can evoke emotional responses.

Second, we contribute to the anthropomorphism literature by demonstrating that when consumers have hedonic intentions for purchasing products, they prefer ads created by humanlike AI tools. As organizations emphasize anthropomorphized aspects of their AI, they are likely to increase general acceptance for AI-enabled programmatic creative and product recommendations (Van Esch et al., 2019). We did not test the “uncanny valley theory,” but it may affect the humanizing of AI-enabled tools and techniques (Kim et al., 2019). That is, consumers expect AI to be humanlike, but if it is too much so, they feel the uncanny valley effect (D’Rozario, 2016). For example, ANZ banks used a digital AI assistant named Jamie to explicitly mimic the look and behaviors of actual human customer service agents. Although consumers knew that Jamie was a virtual agent, they perceived her as being too similar to a human being and avoided using her services. Our study showed that consumers are very critical of humanization of AI - for hedonic products it should be humanlike (vs. non-humanlike).

The findings from a moderated mediation analysis reported in Study 2 show that attitude toward the AI-generated ad mediates the positive effect of humanized AI on purchase intention when the ad message is framed in the hedonic appeals. However, no mediation occurred when the ad message is framed in the utilitarian appeals. Consistent with the theory of planned behavior literature that attitude serves as a proxy for behavioral intention (Ajzen, 1991), the current research enhances our nuanced understanding of the role of anthropomorphism. That is, a higher degree of correspondence between ad attitude and purchase intention is likely when AI-generated ads have human qualities and emphasize hedonic (vs. utilitarian) values of product. In a related vein, evidence shows that consumers prefer hedonic products with anthropomorphic packaging, compared to utilitarian products (Triantos et al., 2016). We contend that the causal path between attitude and intention can also hold in the context of programmatic AI creative advertising.

Third, we contribute to the persuasion literature by exploring how AI can be used in decision contexts involving emotional rather

than rational appeals for hedonic rather than utilitarian products. Specifically, humanlike rather than non-humanlike AI-generated ads positively influence ad attitudes and purchase intentions in hedonic appeals.

Fourth, we contribute to AI customer service research by identifying ad appeals as a moderator. Our findings add to the advertising effectiveness research by revealing that ad appeal is an important boundary condition for the effectiveness of humanlike AI on purchase intentions through ad attitudes.

4.3. Practical implications

Industry practitioners should be aware that consumers have general reservations about AI and should avoid using it to promote highly personal products that may evoke emotional or sensitive reactions. Instead, AI-enabled programmatic creative should be used initially for promoting utilitarian products through rational appeals as consumers gradually form increasing acceptance.

Organizations should enhance consumer knowledge and perceptions about AI’s growing programmatic creative ability. The current lack of knowledge allows consumers to form misperceptions and reject AI-based recommendations, especially for emotion-oriented products. As Turkle (2005) noted emotions are on the borderline -currently, people expect machines to have cognitive capacities but not affective. Nevertheless, Huang and Rust (2020) proposed that AI could potentially get to the “feeling,” the most advanced stage of development.

Last, marketing practitioners and organizations can increase general acceptance by emphasizing anthropomorphized aspects of AI programmatic creative. For example, Lowe’s introduced an AI-enabled robot called Lowebot in its San Francisco stores, allowing customers to use a touch screen to locate items or ask basic customer service questions. However, we advise caution.

4.4. Directions for future research

Our work suggests several paths for future research. First, we present convincing evidence that ad attitude mediates the effectiveness of ads created by humanlike rather than non-humanlike AI on purchase intentions. Ad appeal serves as a moderator. To assess the robustness of our findings, future research could examine whether attitudes regarding the utility of AI-enabled programmatic creative vary across industries, countries, and consumer demographics.

Also, research could consider further factors relating to AI-enabled advertising, such as consumer responses to the utility of anthropomorphised programmatic creative, the inception point for the uncanny valley effect, AI-enabled recommendations for both sensitive and non-sensitive products, and consumers’ previous decision-making experiences with AI-enabled technology.

Researchers should more closely examine possibilities for future advances in perceptions of AI-enabled programmatic creative, especially changes in acceptance of emotional versus rational appeals and hedonistic versus utilitarian product types that are critical factors determining preferences for humanlike rather than non-humanlike AI-generated ads. Such research could provide a typology of comparisons for assessing how marketers can best exploit AI in programmatic creative contexts across scenarios.

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