I’m Only Human? The Role of Racial Stereotypes, Humanness, and Satisfaction in Transactions with Anthropomorphobic Sales Bots

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ABSTRACT This research examines whether consumers ascribe racial stereotypes to artificially intelligent (AI; nonhuman) agents and whether these stereotypes impact ratings of satisfaction, perceptions of competence and humanness, and outcomes of negotiated transactions. Drawing on the stereotype content model, expectation violation theory, and the humanness-value-loyalty framework, we investigate how consumers apply racial stereotype judgments in interactions with artificially intelligent agents in a controlled negotiation experiment. Results reveal that although Black people, in general, are more likely to be stereotyped as less competent than Asian or White people, the opposite is true for Black AI bots. Furthermore, perceptions of competence and humanness of Black AI bots supersede those of Asian and White AI bots, leading to increased ratings of overall satisfaction, and some evidence of more favorable negotiation behaviors. Implications for AI applications in marketing are discussed.

Present research on racial dynamics has focused on the salience of context effecting racial dynamics, demonstrating advanced complexities such as racism hidden among cultural difference dimensions (Galalae et al. 2023) and consumer response to stigmatized-identity cues within a public versus private regard (Rank-Christman and Wooten 2023). Joining the recent call for scholarship that elucidates the experiences of marginalized populations, we probe the application of stereotypic judgements that reside within the background—and sometimes foreground—of advancing technologies.

Technology, particularly in the form of artificial intelligence (AI) and machine learning, has been offered as a mechanism to correct human biases and advance racial equity; however, there are several examples in which these tools have in fact exacerbated some of the same biases that plague human decision makers (e.g., Obermeyer et al. 2019). For example, Microsoft’s AI chatbot “learned” to respond...
using racist language gathered from social media users (Schwartz 2019). There have also been several popular examples of racially biased facial recognition programs, such as Google photos labeling Black people as gorillas (Guynn 2015). Meanwhile, companies and government agencies have come under fire for adopting racially biased decision algorithms, such as recent evidence of a Twitter algorithm that automatically edited out images of Black faces (Collier 2021). Taken together, these examples suggest that racism and discrimination can and do occur within the digital AI world.

An important line of research in this realm considers computer-mediated interaction with humans and the effects of various forms of technology on human decision processes. People commonly interact with AI in the form of avatars and agents. Avatars are controlled by human beings (Fox et al. 2015) and have been used increasingly in social media, digital marketing, training and education, and a host of other contexts requiring customized communication and interaction. Anecdotal evidence suggests that consumers may not necessarily be aware of the extent to which avatars or agents are being guided by human beings. Nonetheless, consumers project human attributes onto AI and the inferences made regarding those projected attributes may have implications for consumption (Belanche et al. 2021).

In this research, we investigate the extent to which the race of an AI-powered sales agent or bot influences consumers’ perceptions of AIs and their corresponding behaviors in the context of a sales negotiation. Prior research has found repeatedly that Blacks are generally perceived as less competent than Whites or Asians (e.g., Fiske et al. 2002; Fiske, Cuddy, and Glick 2007). However, warmth perceptions are mixed when cues of status are absent (e.g., Fiske et al. 2002; Swencionis, Dupree, and Fiske 2017). Here we investigate why and how consumers’ judgments of Black AI agents might differ from their judgments of White or Asian AI agents. Building on prior research on racial stereotypes and perceived human consciousness of artificially intelligent actors, we conducted a controlled experiment in the context of a hypothetical travel accommodations exercise to investigate the effects of the race of virtual agents and stereotype perceptions of agents’ racial groups on human likeness, transactional satisfaction, and transactional outcomes.

**PRIOR RESEARCH ON SALESPERSON RACE**

Prior research has found that expectations, evaluations, and outcomes of marketplace transactions can vary based on perceptions of similarity (vs. dissimilarity) between a communication source and recipient (Simons, Berkowitz, and Moyer 1970). A sizeable body of research supports the homophily effect—the degree to which people in a dyad are similar on certain attributes—wherein people are drawn toward, have more favorable perceptions of, and thus interact more frequently and deeply with similar others (Dellande, Gilly, and Graham 2004; Figeac and Favre 2021; Ertug et al. 2022). Homophily has been linked to negative social consequences (Jackson et al. 2017) and homophilous preferences may be irrelevant to expected economic gains from interacting with the same group (Kets and Sandroni 2019). Moreover, influential attributes between the marketer/agent and customer can include attitudinal, behavioral, racial/ethnic group membership, and other demographic similarities (e.g., Henderson, Hakstian, and Williams 2016). Prior research demonstrates that when customers are demographically similar to marketers/agents, customer satisfaction and marketer/agent performance increase (e.g., Avery et al. 2012; Krishnan, Niculescu, and Fredericks 2019). For instance, with data gathered over 1 year from 739 department stores of a large retailer, Avery and colleagues (2012) showed that high levels of racioethnic similarity were associated with greater customer satisfaction and improved sales productivity among employees. Also supporting a racial homophily perspective, with a sample of more than 600 undergraduates, Krishnan and colleagues (2019) found that among four highly visible factors known to influence customer perceptions of salespeople (i.e., gender, age, race, and attire), race explained the most variance in buyers’ initial preferences for particular salespeople. Their results suggest that racial similarities are especially influential in increasing customer satisfaction and agent performance.

One notable exception to the robust homophily effect can be found in a 1998 sales study in which counter findings were uncovered. Specifically, Jones and colleagues (1998) examined the effects of racial differences between salespersons regarding perceived expertise, trustworthiness, likeability, and purchase intentions. The authors found that Black (vs. White) salespersons were rated more highly on each of these variables by both White and Black study participants. With a largely White (75%) sample, the authors also failed to find evidence that buyers rated salespeople higher when the salesperson’s race was the same as their own. They offered two possible explanations for these effects. One theory is that due to a historical lack of social and economic power, Black salespeople may be perceived as less threatening. Also, given the relative rarity of Black salespeople in general, the Black salesperson may be seen as atypical compared to widely
held stereotypes (Jones et al. 1998). We examine whether these effects persist in the context of a digital environment. Humanlike AI bots used to represent firms are on the rise (Ferrara et al. 2016); however, bots that represent human demographics outside of the White male are not commonplace. Thus, we posit that a Black AI bot will be perceived as atypical. While the present study does not address dyadic differences in the race or ethnicity between customers and agents explicitly, the effects of homophily can be inferred due to the high level of racial similarity of our study participants. And since racial stereotypes can be held regardless of the race of the perceiver (Valla et al. 2018), we build on previous studies that support the existence of differential responses to salespersons based on race.

Although prior studies have considered the effects of the race of the salesperson and the relative racial similarity between the customer and salesperson (Jones et al. 1998; Krishnan et al. 2019), research has yet to consider the extent to which stereotypes are applied to AI agents presented as members of different racial groups and the degree to which these perceptions are associated with attitudinal and transactional outcomes of virtual exchanges. In this study, we investigate the magnitude to which the race of a virtual AI-powered sales agent influences consumers’ perceptions and behaviors in the context of a sales negotiation. Specifically, given the salience of race in customer-salesperson interactions (Grier, Johnson, and Scott 2022) and the variance in stereotype perceptions across racial categories (Fiske et al. 2002), we investigate why and how consumers’ judgments of Black (vs. White and Asian) AI agents might differ and how these judgments influence behavior.

THEORETICAL BACKGROUND AND HYPOTHESES

Humanness, Competence, and Warmth of AI Bots
We extend Belanche and colleagues’ (2021) humanness-value-loyalty (HVL) model, in which humanlike appearance, competence, and warmth perceptions predict customer value expectations and loyalty. The HVL model proposes that visual cues based on the behavior of AI robots in service contexts, like a restaurant, inform customers’ perceptions of the robot’s (a) humanness, the extent to which the robot appears human; (b) competence, the extent to which the robot appears to be intelligent and skilled enough to carry out its designated tasks; and (c) warmth, the extent to which customers perceive the robot to have good or bad intentions. These perceptions, taken together, establish customer expectations about the value of the interaction. The more value perceived, whether functional, social, monetary, or emotional, the stronger customers’ intentions to transact with the service robot. Belanche and colleagues (2021) synthesize prior research suggesting that higher levels of humanization of AI service robots lead to customers perceiving them as having social presence and intelligence. As a result, consumers engage in more “social categorization” or attribution of human characteristics and expectations of the AI, including perceived competence and warmth. While the focus of Belanche and colleagues’ HVL model is on physical AI robots, we apply this model to the context of consumers interacting with virtual AI agents, or bots. We also extend the HVL model by examining attitudinal and behavioral or transactional outcomes associated with the sales interaction as a function of AI bot characteristics, specifically, race.

Indeed, perceptions of humanness are associated with increased perceptions of competence and warmth (Heflick et al. 2011; Kim, Schmitt, and Thalmann 2019). According to the stereotype content model (SCM), group perceptions, including racial groups such as Blacks, Asians, and Whites, are largely organized around the two dimensions of warmth and competence (Fiske et al. 2002). SCM defines warmth perceptions as an interpretation of a person’s intentions (e.g., the degree to which a person is seen as friendly or sincere), whereas competence captures an individual’s ability to perform effectively to achieve their goals (Fiske et al. 2007). However, the authors show that when social status is considered, context can influence these judgments such that warmth and competence perceptions can fluctuate in either direction.

Specifically, stereotype research has long presented Black people as lower in perceived status than White and Asian people (Krueger 1996; Fiske et al. 2002; Bergsieker et al. 2012). For example, Fiske and colleagues (2002) found that Black people are generally stereotyped as significantly less competent and somewhat lower in warmth relative to White and Asian people; however, poor Blacks are perceived as low in both warmth and competence (Fiske et al. 2002, 2007), the same pattern of stereotype judgments that are applied to poor Whites. In addition, Black professionals are perceived as moderately warm and high in competence, similar to the stereotype perceptions found for Asians (Fiske et al. 2002). Building on this literature, we predict that similar racial stereotype judgments for group members will arise when cues of status are absent.

In the forthcoming hypotheses, we address perceptions across parallel contexts including people on the one hand and bots on the other:
H1a: Black people, in general, will be rated as lower in competence than White or Asian people.

H1b: Black people, in general, will be rated as lower in warmth than White or Asian people.

Applying the SCM to the context of customers interacting with racialized AI agents, one might deduce that, absent clear indicators of high status (e.g., job title, formal attire), Black AI agents will conjure less favorable warmth and competence stereotypes than White or Asian AI agents; however, building upon the results of Jones and colleagues’ (1998) study of perceptions of Black and White salespersons, we suspect that stereotype evaluations of the AI agents will differ relative to stereotype perceptions of groups of actual humans. We draw on expectancy violation theory (Jussim, Coleman, and Lerch 1987) to develop predictions about the effect of the AI agent race on consumers’ responses in a negotiation exchange.

**Expectancy Violations in the Context of AI**

At its core, expectancy violation theory (EVT) assumes that stereotypes guide individuals’ expectations. EVT suggests that when individuals perceive characteristics that violate their stereotyped expectations, “evaluations should become more extreme in the direction of the expectancy violation” (Jussim et al. 1987, 537). More specifically, “individuals who possess more favorable characteristics than expected should be evaluated even more positively than others with similar characteristics whom we expected to rate positively all along” (Jussim et al. 1987, 537). Expectancy violation effects are therefore largely driven by an augmentation mechanism. Augmentation occurs when the perceived impact of a factor that affects an outcome (e.g., intelligence) is enhanced because opposing factors are also present. For example, Blacks may be perceived as having a lower level of educational attainment than Whites (an opposing factor; Samson and Bobo 2014), Blacks who appear to be intelligent may be evaluated as even more so relative to equally intelligent Whites. Based on this reasoning, a Black AI agent, presented as a professional representative of a company, may be presumed to have a higher level of education and/or intelligence than a similarly situated White AI agent.

Thus, to the extent that Blacks are perceived as less competent than White or Asian people, EVT would suggest that perceptions of competence would be higher for Black AI agents than for White or Asian AI agents. Similarly, EVT would predict that contrary to human stereotypes, warmth perceptions for Black AI agents would be higher than for White or Asian AI agents. Just as Blacks who spoke the same “standard” English as their White counterparts were evaluated more favorably (Jussim et al. 1987), and just as individuals expect more positive interactions with Black women who smile than they do with smiling White women (Cooley et al. 2018), we predict that evaluations of Black AI bots will be more extreme in the direction of expectancy violation versus identical interactions with White and Asian bots in our simulated negotiation. Formally:

H2a: Black bots will be rated as higher in competence than the White or Asian bots.

H2b: Black bots will be rated as higher in warmth than the White or Asian bots.

Critically, stereotype judgments have been associated with dehumanization (i.e., the perception that an individual or group is “less than” human; Kteily and Landry 2022). For example, Jardina and Piston (2021) found a positive correlation between White people who dehumanized Black people and support for criminal policies that disproportionately affect Black Americans. Similarly, researchers studying implicit dehumanization (e.g., the association between Black people and apes) found that those most likely to make this association were also more likely to condone police violence against Black suspects (Goff et al. 2008). Finally, Black people have been perceived as having less capacity to feel pain (Hoffman et al. 2016; Deska et al. 2020), which has resulted in racial biases in recommended medical treatment.

Prior research offers some evidence that groups who are stereotyped as lacking competence and warmth are more likely to be dehumanized (Harris and Fiske 2006; Vaes and Paladino 2010). Just as perceiving others as less than human has been associated with negative perceptions and outcomes, researchers have become increasingly interested in factors that enhance perceptions of humanness. For example, Leyens and colleagues (2000) examined the relationship between the stereotypical dimensions of competence and complex emotions on attributions of perceptions of humanness. The authors theorize that perceived competence is a necessary component of perceived humanness. Thus, to the extent that Black AI agents are perceived as more competent, thereby violating general expectations, due to operating in a digital environment, the Black AI agent will also be perceived as more (vs. less) human than the White or Asian AI agents.
H3: Relative to White and Asian bots, Black bots will be perceived as higher in humanness.

Researchers and practitioners have also become increasingly interested in factors that enhance perceptions of humanity in the digital world via robots’ anthropomorphic appearance. Indeed, as noted by Epley, Waytz, and Cacioppo (2007, 864), “imbuing the imagined or real behavior of nonhuman agents with humanlike characteristics, motivations, intentions, and emotions is the essence of anthropomorphism.” Anthropomorphism has been conceptualized as the attribution of cognitive states that appear to be uniquely human to nonhuman agents (Waytz, Epley, and Cacioppo 2010).

Although humans’ reactions to anthropomorphized AI agents are not universally positive (e.g., robots that appear “too human” have been associated with negative reactions; Kim et al. 2019), perceived humanness in robots has largely been associated with positive outcomes. For example, people are more persuaded by robots with humanlike characteristics than those that are less anthropomorphic (Ghazali et al. 2018). Soderlund and Oikarinen (2021) examined the relationship between perceived humanness and customer satisfaction and found that humanness perceptions are a function of perceived agency, morality, and emotionality. Furthermore, these authors found that humanness perceptions mediated the relationship between these factors and satisfaction in the context of a service encounter with a virtual agent.

In the present study, we posit that racial stereotypes (i.e., warmth and competence perceptions) reflect differences in perceived agency, morality, and emotionality (Fiske et al. 2002, 2007), since perceived agency implies competence and warmth implies morality and emotionality. As such, building on the Soderlund and Oikarinen (2021) model and extending their findings to perceptions of competence and humanness, we propose that since perceived competence leads to higher assessments of humanness and Black people are stereotyped as low in competence, Black people will also be perceived as less human. We also predict that Black bots will violate stereotype-based expectations, leading to higher perceptions of competence and humanness. As such, transactional satisfaction will be higher for those who interact with the Black bot and that this effect will be mediated by perceptions of competence and humanness. Formally,

H4: Black bots will be associated with higher transactional satisfaction than the White or Asian bots.

H5: The effect of bot race on satisfaction is mediated by perceptions of (a) competence and (b) humanness.

Negotiations and Race

Finally, findings from existing research imply that multiple aspects of the negotiation process—namely, the starting bid, the number of iterations, the size of concessions, and/or the final price—may vary based on the buyer’s race. In a seminal study of negotiations for new car purchases, for example, Ayres and colleagues (1995) compared the prices quoted to Black versus White automobile buyers and found that prices quoted to Black buyers were significantly higher. The authors conclude that these effects may be due to dealers’ prejudiced assumptions about consumers’ reservation prices. Similarly, Gligor, Newman, and Kashmiri (2021) examined the effects of the salesperson’s race on perceptions of the transaction and outcomes. These authors found evidence suggesting that the race of a salesperson, vis-à-vis racial stereotypes, can affect buyers’ evaluations of the sales encounter as well as characteristics of the transaction. The present study is similar in design and extends these studies; yet we examine whether racial stereotypes play a similar role in a negotiation in which the context and the salesperson are virtual. To the extent that such stereotypic perceptions are based on beliefs about the relative competence of Black virtual agents (vs. White and Asian agents), we draw from our expectancy violation account to predict the following:

H6: Black bots will elicit more favorable negotiation outcomes, including (a) shorter duration time, (b) fewer rounds, and (c) a higher final price.

Method

To examine these relationships, we conducted a series of simulations that were designed to mimic an online home-sharing company’s web-based, “bot”-driven system connecting travelers with potential hosts. Prospective renters visit the company’s portal, are introduced to a bot, and negotiate with the bot for a final price for a temporary home-sharing arrangement. In our experiment, participants were randomly assigned to interact with an anthropomorphic bot (featuring full-body, wardrobe, and dynamic nonverbal gestures and facial expressions) that was either Black, White, or Asian (fig. 1). Participants were presented with the following hypothetical scenario: “Imagine you have an upcoming 4 days, 3 nights trip to New York City. Your goal
is to save as much as possible. All nearby hotels are more than $400 per night, so you decide to use an online home-share service. However, you must first negotiate the lowest possible price. The lower your negotiated price (the ‘better deal’ you get at the end of the negotiation, however long that lasts), the better. I would now like to introduce you to Jamie."

Study participants were then asked to complete up to eight rounds of a simulated negotiation with their randomly assigned AI agent (bot) for a vacation home-share rental. The AI agent was programmed to make monetary counter-offers until the participant agreed to accept a price (as well as displaying real-time nonverbal body, hand, and facial gestures—so that the bot moved when reacting to a bid from participants). As an incentive, participants were told that the lower the price they were able to negotiate, the higher their compensation. The average compensation for participants was $.40. At the end of the negotiation, participants were asked to respond to a series of survey questions.

Dependent variables will include the following characteristics of the transaction: the amount the participant was willing to spend on the accommodations for 4 days and 3 nights (measured after the negotiation with the bot); the number of counter-proposals made by the participant; duration (i.e., the total amount of time spent negotiating with the AI agent). In addition, we examined warmth and competence stereotypes toward the agent’s racial group (Asian, Black, or White people), perceptions of the bot’s humanness, as well as attitudes toward the agent and the company, including transactional satisfaction.

To capture attitudes toward the agent and company, participants rated their satisfaction (scale adapted from Balasubramanian, Konana, and Menon 2003) with the AI bot as follows: “To what extent did you find the representative with whom you worked to be credible?” (1 = not at all credible, 9 = highly credible), “Overall, I am satisfied with my online representative” (1 = strongly disagree, 7 = strongly agree); “I am likely to recommend the online representative to my friends” (1 = extremely unlikely, 7 = extremely likely); “With respect to my overall experience of the purchase through this website I feel” (1 = extremely dissatisfied, 7 = extremely satisfied). We computed a Cronbach’s alpha index of reliability for this and all other multiple item measures in our analysis (Cronbach 1951; Cortina 1993). These items displayed good reliability (α = .90) and thus were averaged into a composite measure for satisfaction.

Participants rated the competence of the (human) members corresponding with the AI bot’s race (scale adapted from Fiske et al. 2002) as follows: “As viewed by society, how would you describe members of the group (e.g., race and gender) of the avatar-representative who you interacted with earlier?” (1 = strongly disagree, 7 = strongly agree): competent, confident, capable; efficient, intelligent, skillful. Based on Cronbach’s alpha, these items were reliable (α = .93) and were averaged into a composite measure for generalized stereotype competence perceptions.
Participants rated the warmth of the members of the AI bot’s race on a 1–7 Likert scale (1 = strongly disagree, 7 = strongly agree; scale adapted from Sharpe et al. [2007]) as follows: “I feel like this representative has intentions to depict more warmth of the AI bot on a 1–7 Likert scale (1 = strongly disagree, 7 = strongly agree; scale adapted from Sharpe et al. [2007]) as follows: “I have confidence in this representative’s skills and expertise”; “I trust this representative.” These items were reliable (α = .82) and thus were averaged into a composite measure, which we denote as bot competence. Participants then rated the warmth of the AI bot on a 1–7 Likert scale (1 = strongly disagree, 7 = strongly agree; scale adapted from Sharpe et al. [2007]) as follows: “I have confidence in this representative’s skills and expertise”; “I know this representative is trustworthy, warm, good-natured, sincere. The Cronbach’s alpha for these items indicated good reliability (α = .95). The average of these items was used to create a composite measure for generalized stereotype warmth perceptions.

Participants rated the competence of the AI bot on a 1–7 Likert scale (1 = strongly disagree, 7 = strongly agree; scale adapted from Fiske et al. [2002]) as follows: “As viewed by society, how would you describe members of the group (e.g., race and gender) of the avatar-representative who you interacted with earlier?” (1 = strongly disagree, 7 = strongly agree): friendly, well-intentioned, trustworthy, warm, and thus were averaged into a composite measure, which we denote as bot competence. Participants then rated the competence of the AI bot on a 1–7 Likert scale (1 = strongly disagree, 7 = strongly agree) adapted from Sharpe et al. [2007]) as follows: “I have confidence in this representative’s skills and expertise”; “I trust this representative.” These items were reliable (α = .86), and thus were averaged into a composite measure, which we denote as bot competence. Participants then rated the warmth of the AI bot on a 1–7 Likert scale (1 = strongly disagree, 7 = strongly agree) adapted from Sharpe et al. [2007]) as follows: “I have confidence in this representative’s skills and expertise”; “I view this representative as a sincere person.” Because the Cronbach’s alpha for these items indicated good internal consistency (α = .86), we included the average of these items as a composite measure, which we denote as bot warmth.

Finally, participants rated the humanness of the AI bot on a 1–7 Likert scale (1 = strongly disagree, 7 = strongly agree; adopted from Waytz, Cacioppo, and Epley’s [2010] anthropomorphism scale): “I feel like this representative has consciousness”; “I feel like this representative has intentions”; “I feel like this representative has free will”; “I feel like this representative is aware and alert within the situation”; “I feel like this representative experiences emotions.” The Cronbach’s alpha for items indicated high reliability (α = .95) and thus were averaged into a composite measure for humanness.

Results
Sample Characteristics. Our sample included participants recruited from Amazon’s Mechanical Turk (MTurk) and a subject pool of undergraduate students at a large university located in the Midwestern region of the United States. Participants were randomly assigned to one of three categories of bot race (Black, White, Asian). In total, 837 participants completed the survey; 34 participants failed the attention check, resulting in a total of 803 (N = 803) usable cases. The demographic characteristics of the participants were as follows: 49.6% female, 50.4% male, and M_age = 30.94. In terms of racial/ethnic background, our sample was 57.9% White, 30.3% Asian, 5.2% Black, 4.1% Hispanic, 0.9% Middle Eastern, and 0.9% Native American.

Stereotype Perceptions. To test for racial differences in warmth and competence stereotypes, we ran a series of ANOVA procedures using SPSS. We found a significant effect of agent race on perceptions of competence (F(2, 800) = 5.18, p < .05). Planned contrasts revealed that participants rated Black people as significantly less competent (M = 5.35, SD = 1.28) relative to White people (M = 5.55, SD = .89) and Asian people (M = 5.62, SD = .88; t(800) = 141.51, p < .05). These results support hypothesis 1a, suggesting that overall stereotype perceptions of decreased competence were applied to the population associated with the race represented by the bot. We found no significant racial differences in perceptions of warmth (F(2, 800) = 1.42, p = .24). Thus, hypothesis 1b was not supported.

Bot Competence and Warmth. A one-way ANOVA revealed a significant effect of agent race on bot competence (F(2, 800) = 6.90, p < .05). A set of planned contrasts revealed that participants rated the Black Agent significantly higher in bot competence (M = 5.46, SD = 1.16) relative to the White bot (M = 5.14, SD = 1.02) and the Asian bot (M = 5.20, SD = 1.00; t(800) = 134.20, p < .05), supporting hypothesis 2a. Moreover, the same analysis revealed a significant effect of agent race on bot warmth (F(2, 800) = 13.12, p < .05). A set of planned contrasts revealed that participants rated the Black agent significantly higher in bot warmth (M = 5.50, SD = 1.14) relative to the White bot (M = 5.03, SD = 1.04) and the Asian bot (M = 5.18, SD = 1.05; t(800) = 131.23, p < .05), supporting hypothesis 2b.

Humanness. Consistent with hypothesis 3, the main effect of Agent Race was significant for perceived humanness (F(2, 800) = 10.88, p < .05). A planned contrast analysis of the humanness variable showed that participants perceived the Black bot (M = 5.05, SD = 1.57) to depict more humanness relative to the White bot (M = 4.46, SD = 1.56) and Asian bot (M = 4.57, SD = 1.51; t(800) = 82.71, p < .05).

Transactional Satisfaction. In support of hypothesis 4, we found a significant effect of bot race on satisfaction (F(2, 800) = 10.52, p < .05). A planned contrast for satisfaction revealed that the Black bot had higher satisfaction ratings...
Serial Mediation Analysis. As suggested in prior literature and these findings, Black people are generally perceived as less competent relative to White and Asian people (Fiske et al. 2002, 2007). Furthermore, these findings indicate that although Black people are perceived as less competent, the Black bot was perceived as more competent and more human. We theorize that within the context of a digital environment, perceptions of competence may amplify in the opposite direction due to expectation violation. Moreover, Belanche et al. (2021) found that increasing humanness in robots increased positive consumer attitudes toward those bots, which suggests that the increased perceptions of the humanness of the Black bot contributed to higher ratings of satisfaction. Thus, we tested whether the race of the bot led to increased ratings of satisfaction due to bot competence (mediator 1 [M1]) and humanness (mediator 2 [M2]). Following the Hayes and Preacher (2014) method for multicategorical independent variables, we dummy-coded the race of the AI bot using the Black bot as the reference group (Black = 1, Asian = 0, White = 0) and labeled this predictor variable “race of AI bot.” We ran a serial mediation analysis (10,000 resamples) using Hayes PROCESS model 6 (Hayes 2014) with race of AI bot as our predictor variable, bot competence and humanness as our mediators, and satisfaction as our respective outcome.

Results of this mediation model were consistent with serial mediation (see fig. 2). Critically, this analysis revealed that perceptions of bot competence (indirect effect = .20, SE = .06, 95% CI [.07, .33]) and humanness (indirect effect = .04, SE = .02, 95% CI [.02, .08]) both mediate satisfaction in a sequential process (indirect effect = .02, SE = .01, 95% CI [.01, .03]). Thus, hypothesis 5 was supported. In sum, the results suggest that when the AI bot is Black (relative to Asian or White), perceived bot competence and humanness have a greater positive effect on transactional satisfaction.

Negotiation Outcomes. In addition, a similar analysis of Duration of the Negotiation found that participants spent the least amount of time negotiating with the Black bot ($M = 1.78$, $SD = .26$) relative to the White bot ($M = 1.93$, $SD = .28$) and Asian bot ($M = 1.89$, $SD = .21$; $t(800) = 195.69, p < .05$). We found no significant effects of bot race on the starting bid ($F(2, 800) = .56, p = .57$), number of rounds ($F(2, 800) = .97, p = .38$), or final offer ($F(2, 800) = 1.03, p = .36$). Thus, hypothesis 6a is supported, but we find no support for hypotheses 6b or 6c.

Discussion of Findings
The present study provides evidence to support our proposed model of expectancy violation of racial stereotypes of AI bots. Specifically, the findings demonstrate that stereotype perceptions typically applied to person-to-person interactions may function differently for person-to-bot interactions.

Figure 2. Mediation depicting the relationships between satisfaction for interactions with race of AI bot, mediated by bot competence (M1), and humanness (M2). *$p < .05$; **$p < .01$; ***$p < .001$. 

![Diagram](image-url)
Previous studies on salespeople have exposed differences in trust and sales when the salesperson is Black, albeit with mixed results. For example, Comer, Nicholls, and Vermillion (1998) found that trust and sales declined when the salesperson was Black, while other studies have found that consumers hold more favorable attitudes toward Black and other ethnic minority sales agents (Avery et al. 2012). Our study seeks to contribute to the sparse research on how these perceptions may vary in interactions with digital sales agents (bots). We find that Black bots were perceived by participants as higher in competence and humanness than White or Asian bots, suggesting that the stereotypical expectations applied to Black humans were violated in the case of Black AI bots. We found no differences in warmth perceptions based on bot race. One possibility is that warmth is not a relevant trait of AI bots.

We also found that participants assigned higher satisfaction ratings to transactions with the Black bot relative to the Asian or White bots. An analysis of mediation found that these higher ratings could be explained by higher perceived humanness and competence of the Black bot. Participants also spent the shortest amount of time negotiating with the Black bot. Thus, while previous literature has demonstrated that salespeople of color can face discriminatory practices such as negotiating less or offering lower prices (e.g., Gligor et al. 2021), we did not find a significant link between bot race and final price or number of negotiation rounds and thus contend that participants reacted more positively to the Black bot than the White or Asian bots.

GENERAL DISCUSSION

The enthusiastic adoption of digital environments from both consumers and firms raises new ethical challenges for brands in how they consider racial representation in the virtual world (McDowell 2021). While slightly more research has been conducted to investigate gender stereotyping of AI agents/chatbots (e.g., McDonell and Baxter 2019), scant research has investigated how representations of race may influence interactions with AI agents, and even less so within the context of marketing. Our research makes theoretical and practical contributions by addressing the gap in understanding how race is perceived in the digital world and informs marketing practitioners faced with critical design decisions. In a simulated home-sharing negotiation between a prospective renter and an AI agent, we demonstrate that racial stereotypes (i.e., competence) are applied to AI agents and that these stereotypes, in concert with perceived humanness, affect consumer responses. In addition, we find support for EVT in that—when traits defy stereotypes—the fact that the agent is artificially intelligent can lead to opposing beliefs. Thus, consistent with prior research, participants stereotyped Black people as less competent and less human, while the Black AI bot was perceived to be more competent and more human. It is worth noting that any perceived differences in the three bots (Asian, Black, White) were solely a function of the only manipulated variable within the bot itself—race—since the actual algorithm was identical across the three bots. In sum, participants were aware of, and made judgments based upon, the race of the bot; and racial stereotypes typically applied to humans may have likewise come into play within this virtual environment.

While the mechanisms through which these race-based judgments presented themselves in the virtual environment possibly follow different underlying assumptions and perceptions, the resulting race-based judgments are nevertheless salient. Future research may take a more granular approach to examine stereotypic judgements within virtual environments. For example, research on identity-based appeals demonstrates conditions in which these marketing strategies can backfire via categorization threat (Kim et al. 2023). These judgments have in fact influenced transactional outcomes and informed negotiation behavior (in the present study), suggesting that stereotypic judgments may be activated within the digital environment, and should be considered when designing AI agents as firm representatives. As human-like representation within the virtual environment grows (see Nowak and Fox [2018] for a review), could it be that categorization threat resides in the virtual environment and mimics that of the natural world? This is a fruitful area of future research. Moreover, these judgments influenced transactional outcomes and informed negotiation behavior, suggesting that stereotypic judgments may operate distinctly in the digital environment relative to the working world, and thus should be considered when designing AI agents as firm representatives.

Perceptions of humanness were also impacted by the racial representation of the AI agent, with Black bots having higher perceptions of humanness, and influencing successful interactions with the AI agent. This specific insight further informs marketing practitioners who make crucial decisions in employing humanlike chatbots as firm representatives. For instance, prior research has shown that when customers are in an angry emotional state, a humanlike chatbot can negatively impact customer satisfaction because the humanness of the chatbots raises unrealistic expectations of how helpful they will be (Crolic et al. 2022). Based on the present study’s findings, any negative
consequences of the perceived humanness of a chatbot might be attenuated by the bots’ visual racial representation. On the other hand, other research has shown that when robots appear to be too human, negative attitudes toward the bots increase (Kim et al. 2019). With that said, we find that AI agents with the highest ratings of humanness tend to also have the highest ratings of transactional satisfaction, suggesting that the context of the interaction significantly influences the consumer’s experience with AI. Extending our findings by investigating how, and in which contexts, one might attribute positive versus negative interactions to consumers and consumer-facing AI agents would be a worthy area for future exploration.

These findings were based on self-reported rating-scale data as well as behavioral data points (price negotiated, time to reach an agreement, number of rounds, and more). Although measures of racial perceptions can be subject to social desirability bias, our data were collected in ways that are less susceptible to impression management goals, because these behaviors are less easily controlled and monitored (whether consciously derived or not), and this has brought to light several unanticipated outcomes.

On the one hand, these findings suggest that AI presents yet another avenue for racial biases to potentially flourish. On the other hand, these data bring forth an opportunity to use anthropomorphotic bots for changing misperceptions, prototypical beliefs, and preconceived notions within human-to-human interactions as well. Thus, this research has implications for ethical AI (Martin 2019), a growing area of scholarly focus, as well as algorithmic reparations whereby technological tools are designed explicitly to reduce bias (Davis, Williams, and Yang 2021). In this way, bots may someday play less of a role as mere shadows of humans and, instead, play a powerful role in actually shaping human behavior—realizing a substantive shift from only human to wholly human.

REFERENCES
Figeac, Julien, and Guillaume Favre (2021), “How Behavioral Homophily on Social Media Influences the Perception of Tie-Strengthening within Young Adults’ Personal Networks,” *New Media and Society,* https://doi.org/10.1177/14614448211020691.


