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ORIGINAL EMPIRICAL RESEARCH

# How speaking versus writing to conversational agents shapes consumers' choice and choice satisfaction

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## Abstract

The use of conversational agents (e.g., chatbots) to simplify or aid consumers' purchase decisions is on the rise. In designing those conversational agents, a key question for companies is whether and when it is advisable to enable voice-based rather than text-based interactions. Addressing this question, this study finds that matching consumers' communication modality with product type (speaking about hedonic products; writing about utilitarian products) shapes consumers' choice and increases choice satisfaction. Specifically, speaking fosters a feeling-based verbalizing focus, while writing triggers a reason-based focus. When this focus matches consumers' mindset in evaluating the product type, preference fluency increases, thereby enhancing choice satisfaction. Accordingly, the authors provide insights into managing interactions with conversational agents more effectively to aid decision-making processes and increase choice satisfaction. Finally, they show that communication modality can serve as a strategic tool for low-equity brands to better compete with high-equity brands.

**Keywords** Conversational agent · Digital assistant · Chatbot · Speaking · Choice

## Introduction

The use of conversational agents (also called chatbots, shopping agents, and digital assistants) is on the rise. These involve "natural language computer programs designed to approximate human speech (written or oral) and interact with people via a digital interface" (Thomaz et al., 2020, p. 49) and are increasingly being deployed by many companies to simplify or aid consumers' purchase decisions (e.g., Castelo et al., 2023; Fotheringham & Wiles, 2023; Guha et al., 2023; Hildebrand & Bergner, 2021; Zierau et al., 2023). According to Noble and Mende (2023, p. 748), "chatbots and voice-based interfaces … are becoming increasingly common for retail and service providers." In particular, companies can adopt conversational agents in contexts such as online sales channels. For example, the British telecommunications company *Vodafone* uses its conversational agent TOBi to help consumers choose a mobile plan on the company's website. Likewise, French personal care and beauty products retailer *Sephora* uses a conversational agent in instant messengers to assist consumers in choosing beauty items.

Consumer interactions with conversational agents typically involve written communication (Melzner et al., 2023). This is because technology that enables text-based communication (i.e., writing to a conversational agent) tends to be less costly and easier to implement than technology for voice-based communication (i.e., speaking with a conversational agent; Grills, 2019). However, driven by recent advances in artificial intelligence, oral communication will improve considerably in the coming years and become

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more feasible and relevant (Guha et al., 2023). In particular, emerging large AI-powered language models (e.g., ChatGPT) are increasingly enabling oral communication which will further drive the adoption of voice-based conversational agents in marketing practice. Several companies have already begun allowing consumers to choose between oral and written communication. For instance, *Bank of America* recently introduced Erica, a virtual financial assistant with which consumers can interact through either oral or written communication. As another example, *KLM* airline's "Blue Bot" assistant guides consumers through the booking process using either oral or written input (see Web Appendix A).

However, despite the increasing relevance of speaking and writing with conversational agents in marketing practice, the impact of the communication modality in interactions with conversational agents has received little attention in marketing research. Rzepka et al. (2022) have shown that oral (vs. written) interactions with smart speakers in the context of a restaurant search increase enjoyment and lead to stronger perceptions of service satisfaction. Similarly, Zierau et al. (2023) found that speech-based rather than text-based interactions with a digital assistant as part of completing an insurance claim lead to a more flow-like user experience that improves the service experience. Initial studies on the immediate effects of speaking and writing have demonstrated that writing leads consumers to mention more interesting products and brands (Berger & Iyengar, 2013), while speaking enhances self-brand connection (Shen & Sengupta, 2018) and the expression of emotional attitudes (Berger et al., 2022).

Despite these initial findings, we lack insights into whether and how speaking and writing with conversational agents impacts key outcomes of consumers' decision-making processes such as choice and choice satisfaction (i.e., "satisfaction or regret regarding the chosen alternative or rejected alternative"; Zhang & Fitzsimons, 1999, p. 193). Such an understanding is crucial because, as mentioned above, consumers are increasingly interacting with conversational agents to aid their decision process. According to Hoyer et al. (2020, p. 60), "AI, in its conversational … form, offers great potential for improving outcomes for consumers." Additionally, choice and choice satisfaction are important decision-making outcomes as they influence repurchase behavior and are, therefore, critical to a firm's profits (Heitmann et al., 2007). However, from both a managerial and an academic perspective, there is limited knowledge of how to implement voice- and text-based interactions with conversational agents to effectively aid decision-making processes and improve choice satisfaction.

In light of this, a key research question concerns whether and how the communication modality used, speaking or writing, influences consumer decision-making outcomes. Stated differently, when is it advisable for marketers to implement technologies that enable oral communication (the adoption of which is rapidly improving and increasing) rather than written communication (which is currently the norm)?

In addressing this question, this research investigates the impact of the communication modality (speaking vs. writing) in interactions with conversational agents on choice and choice satisfaction. We theorize that the modality affects consumers' verbalizing focus (i.e., whether it induces a focus on feelings or reasons). Building on this supposition, we examine how matching the modality with the product type (i.e., speaking about hedonic products; writing about utilitarian products) impacts decision-making outcomes (choice, choice satisfaction, and intention to choose). Moreover, we investigate preference fluency (i.e., the subjective experience that forming a preference is easy; Novemsky et al., 2007) as the mechanism underlying the matching effect. Finally, we examine how brand equity influences the matching effect on decision-making outcomes. We present the conceptual framework guiding this research in Fig. 1.

From a managerial perspective, our work provides guidance in several areas. In particular, "recent years have witnessed explosive growth in firms' application of conversational AI" (Fotheringham & Wiles, 2023, p. 802), and we offer valuable insights into whether and how speaking and writing in interactions with conversational agents can help consumers make their choices and increase their choice satisfaction. In particular, we provide suggestions on how marketers can sell products through conversational agents more effectively. Furthermore, whether companies are selling primarily hedonic products, primarily utilitarian products, or both, our research provides guidance on how best to manage interactions through conversational agents. In addition, brand equity has been found to be a key driver of consumer choice (i.e., high-equity brands are more preferred over low-equity brands; Erdem & Swait, 1998). Therefore, low-equity brands search for ways to compete more effectively with high-equity brands. We provide important insights into how these low-equity brands can strategically manage communication modality as one tool for more effective competition with high-equity brands.

This study also has four important academic contributions. First, we investigate the distinct effects of speaking and writing to conversational agents on the decision-maker's choice and choice satisfaction. Hence, we respond to calls for research to "broaden the topic of language-based consumer judgment and choice" (Schmitt & Zhang, 1998, p. 120) by examining interactions with conversational agents. Second, we shed light on the interplay between communication modality and product type by introducing a novel matching effect that shapes the decision-maker's choice (i.e., favoring hedonic products when speaking and utilitarian products when writing) and enhances choice satisfaction (i.e., when

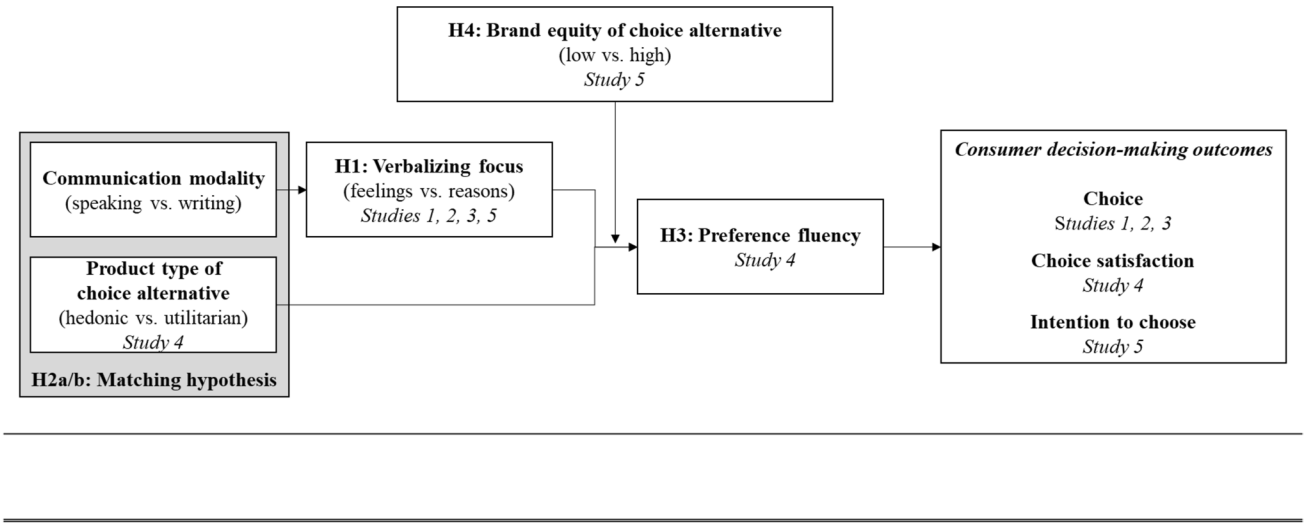


**Fig. 1** Conceptual framework: Impact of speaking versus writing to conversational agents on consumer decision-making outcomes

speaking about hedonic products or writing about utilitarian products). Third, it is critical to understand the process explaining the matching effect. We propose that preference fluency is the key construct which provides this explanation. We predict that the type of reason, whether emotional or rational, induced by speaking or writing is crucial for promoting preference fluency. Fourth, we shed light on how the brand equity of choice alternatives may influence the impact of the communication modality on decision-making outcomes. High-equity brands are usually well known. However, consumers typically have less information regarding low-equity brands, and thus, the matching effect can aid consumers in evaluating information about these brands.

## Conceptual background and hypothesis development

### How communication modality affects consumers' verbalizing focus

A considerable amount of literature, primarily in the communications field, has discussed how oral communication differs from written communication (Chafe, 1985; Chafe & Tannen, 1987; Fondacaro & Higgins, 1985). Oral communication usually consists of immediate interactions in which message generation and transmission overlap (Tannen, 1985). Individuals tend to speak relatively continuously and speaking does not involve much planning, which leads individuals to talk about whatever comes to mind (Altenberg, 1984). This characteristic makes oral communication more spontaneous and subjective (Berger & Iyengar, 2013). Greater subjectivity during speaking results in individuals using more personal pronouns and arguments based on emotion rather than deliberation (Shen & Sengupta, 2018). Hence, speaking is a less formal way to communicate, as it adds a personal element to a message (Berger & Schwartz, 2011) and contains more emotion-laden expressions (Chafe & Tannen, 1987). In support of this notion, Berger et al. (2022) have shown that individuals express more emotional attitudes when speaking (vs. writing).

In contrast, written communication allows the communicator to think about what to say, both before s/he begins to communicate and during the creation of content (Berger et al., 2022). Thus, written communication allows for multiple ideas to be integrated into a cohesive linguistic whole. Such communication is, therefore, relatively objective, structured, and detached (Akinnaso, 1982), making it a more cognitive and deliberative activity. Specifically, written communication focuses on the information to be conveyed, and writers seek to reduce any confusion about the message communicated (Tannen, 1985). Writers therefore express more reasons and rely on greater lexical diversity by using more complex words and expressing greater idea density (Chafe & Tannen, 1987).

Consequently, in the context of our research, we argue that the communication modality used shapes the extent to which individuals focus on feelings or reasons in interactions with conversational agents. In particular, when individuals speak about choice alternatives, they should be more likely to express feelings. However, when writing, individuals should be more likely to focus on reasons. Stated formally, we hypothesize the following:

**H1** Speaking about choice alternatives fosters a greater verbalizing focus on feelings, while writing leads to a greater focus on reasons.

## Matching communication modality with product type

We propose that the communication modality not only influences the extent to which consumers focus on feelings or reasons in interactions with conversational agents but also carries consequences for consumers' choice and choice satisfaction when it matches the product type. This proposition builds on a large body of literature demonstrating that congruence between a focus on feelings/reasons and the product type being evaluated (hedonic vs. utilitarian) affects consumer decision-making (e.g., Dhar & Wertenbroch, 2000). Research has shown that individuals perceive feelings as more informative in evaluating the potential fulfillment of hedonic products (Pham, 1998). Such perception occurs because hedonic products primarily offer experiential benefits, such as fun and pleasure, and are typically evaluated based on the affect triggered when using or consuming them (Hirschman & Holbrook, 1982). A focus on reasons, however, is perceived as relevant when evaluating utilitarian products, as these products provide more functional benefits and are evaluated based on more objective considerations (Dhar & Wertenbroch, 2000). The notion that a focus on feelings matches the evaluation of hedonic products and a focus on reasons matches the evaluation of utilitarian products is relevant for the present research, as we argue that the communication modality fosters a verbalizing focus on feelings versus reasons (as argued in H1). Consequently, we suggest that speaking about choice alternatives is congruent with hedonic products and writing about choice alternatives with utilitarian products.

A matching effect is grounded on the premise that an individual's choices and judgments are more valid and reliable when the properties of the task match the type of processing employed (Hammond et al., 1987). Matching refers to a "it just feels right" experience (Lee & Aaker, 2004, p. 212) that "creates a motivational force that absorbs and engrosses people" (Lee et al., 2010, p. 736), generally resulting in positive behavioral consequences. Several studies have shown that matching experiences increase engagement and lead consumers to feel "right," which ultimately enhances the attitude toward a target (Lee & Aaker, 2004) and the perceived value of a target (Camacho et al., 2003). Matching effects have been widely established in self-construal contexts (Higgins, 2000). Humphreys et al. (2021), for example, have found that consumers are more satisfied with and likely to click on advertising content that matches their construal level.

Considering these findings, when the communication modality used matches the product type concerned in interactions with conversational agents (i.e., speaking about hedonic products and writing about utilitarian products), we propose that consumers perceive the feelings and reasons they verbalize as informative of potential fulfillment with the product type at hand. Consumers thus feel "right" about the feelings and reasons they verbalize and may incorporate this experience when making a choice about a product and, subsequently, when evaluating their choice. For example, consumers may perceive the feelings that come to mind when speaking (vs. reasons that come to mind when writing) about different beach resorts when booking summer vacation accommodations to "fit" the mindset they use to evaluate beach resorts. Thus:

**H2** Matching the communication modality with the product type positively influences consumer decision-making outcomes compared with situations of mismatch.

Further, we examine two important choice situations: For across-product-subcategory choices (i.e., choosing between hedonic vs. utilitarian products), consumers will be more likely to choose hedonic products when speaking and utilitarian products when writing with conversational agents.

**H2a** For across-product-subcategory choices, consumers are more likely to choose hedonic products when speaking and utilitarian products when writing.

Moreover, for within-product-subcategory choices (i.e., choosing between several hedonic or between several utilitarian products), consumers will be more satisfied with their choice when speaking about hedonic products and writing about utilitarian products with conversational agents. Stated formally,

**H2b** For within-product-subcategory choices, consumers are more satisfied with the choice when speaking about hedonic products and writing about utilitarian products.[1]

Previous research on matching effects has shown that "feeling right" experiences are associated with perceptions of fluency (e.g., Humphreys et al., 2021; Lee et al., 2010; Lee & Aaker, 2004)—an important construct that has fundamental

[1] When consumers are choosing between only hedonic or only utilitarian products (i.e., within-product-subcategory choices), consumer choice (a binary measure) is not an effective measure for capturing the impact of communication modality because all choices within the product category would either match or mismatch with communication modality. In other words, the modality effect occurs at the product category level and not at the level of individual choice within the category. However, the impact of the communication modality on consumer decision-making may manifest in choice satisfaction (a more relative or interval level measure) when the communication modality matches the product type.

implications for consumer judgments and behavior, such as increasing consumer evaluations (White et al., 2011). We propose that matching communication modality with product type triggers a specific type of fluency, namely, *preference fluency,* which arises when the choice of an option is perceived as less difficult or requires little effort and may induce the inference that the choice itself is easy (Novemsky et al., 2007). We argue that congruence between communication modality and product type in interactions with conversational agents (i.e., when consumers feel "right" about this verbalizing and perceive it as informative about the product type at hand) triggers the metacognitive experience that a choice is easy (i.e., preference fluency), which, in turn, shapes decision-making outcomes. Thus, we propose the following:

**H3** Preference fluency mediates the effect of matching communication modality with product type on consumer decision-making outcomes.

### The moderating role of brand equity

To assess the relevance and strength of the matching effect in decision-making processes, we examine the extent to which it affects decision-making outcomes when consumers can draw on information to evaluate the potential fulfillment of a choice alternative in addition to the "feeling right" experience resulting from the matching effect. While a variety of different variables could influence this process, we predict that brand equity will play a key role. Brand equity is the "value added to a product by its brand name" (Yoo et al., 2000, p. 195, see also Heinberg et al., 2020), and differences in brand equity between choice alternatives have been shown to be a critical factor in choice contexts (Slotegraaf & Pauwels, 2008). We hypothesize that the matching effect affects consumer decision-making more when the value of a brand is low (vs. high) and consumers therefore have little information to draw upon in evaluating this brand. Thus, depending on whether the brand equity of a choice alternative is low or high, we suggest that it influences the effect of matching the communication modality with the product type on consumer decision-making outcomes.

Previous research has shown that high-equity brands reduce search costs and uncertainty compared to low-equity brands (Erdem & Swait, 1998). Furthermore, they are evaluated more favorably and increase consumer preferences (Hoeffler & Keller, 2003). Most importantly, brand equity has been shown to be a strong driver of consumer choice that can mitigate the impact of other factors influencing choice (Ho-Dac et al., 2013). Therefore, when brand equity is dissimilar between alternatives, the impact of communication modality on intention to choose in interactions with conversational agents should be attenuated for high-equity brands. In other words, because consumers are well aware of these brands' superior value (Yoo et al., 2000), they should generally be more likely simply to choose the high-equity brand and therefore less likely to rely on speaking versus writing to help them make their choice.

However, speaking versus writing can be helpful for low-equity brands, as consumers are less aware of the value the brand name adds to the product, and verbalizing allows consumers to better evaluate the potential fulfillment of these brands. This could have the effect of increasing the favorability of low-equity brands and the chance of consumers selecting them.

**H4** When brand equity between choice alternatives is dissimilar, a match between communication modality and product type has a stronger positive effect on intention to choose for low-equity brands than for high-equity brands.

## Empirical overview

**Order of studies** We test our hypotheses in a series of five studies (see Table 1). In Study 1, we explore how the communication modality used affects the decision-maker's verbalizing focus (H1) and subsequently influences his or her choice of a hedonic or utilitarian product (H2a). In this study, we allow consumers to choose the communication modality (speaking vs. writing) with which they feel most comfortable for interactions with conversational agents. Study 2 employs interactions via instant messaging and replicates our initial findings for the controlled selection of a communication modality in an attempt to rule out explanations of self-selection. In Study 3, we investigate the impact of communication modality on choice when ordering food online via a digital assistant. Study 4 investigates whether consumers are more satisfied with a choice (H2b). In addition, we test whether preference fluency is the mechanism underlying the matching effect (H3). In Study 5, we explore whether the brand equity of choice alternatives (low vs. high) affects the impact of communication modality on consumers' intention to choose a product (H4), providing novel implications for brand managers.

**Data quality** To collect high-quality data, we established specific parameters prior to data collection. First, we predetermined the sample sizes in our studies (at least 50 participants per cell) based on previous research and recent norms (e.g., Biswas et al., 2023). Second, following Hulland et al. (2018), three to five participants were asked to provide feedback for each survey to ensure comprehensibility. Third, we included a quality check in all studies to account for misuse (e.g., sending a voice message without speaking or an empty text message).

**Realistic settings and behavioral outcomes** We conducted our studies in realistic settings based on the applications and

**Table 1** Overview of studies

| Study & hypotheses | Context | Data | Stimulus | Dependent variable |
|---|---|---|---|---|
| **Communication modality shapes consumer choice** | | | | |
| *Study 1* | | | | |
| H1: Verbalizing focus<br>H2a: Choice | Lab experiment | 145 college students | Hotels | Choice: hotels described by hedonic vs. utilitarian attributes |
| *Study 2* | | | | |
| H1: Verbalizing focus<br>H2a: Choice | Online experiment | 114 college students | Movies | Choice: action movie (hedonic) vs. documentary (utilitarian) |
| *Study 3 (reported in full detail in Web Appendix G)* | | | | |
| H1: Verbalizing focus<br>H2a: Choice | Lab experiment | 152 college students | Food delivery | Choice: hedonic foods vs. utilitarian foods<br>Food quantity |
| **Matching communication modality with product type increases choice satisfaction** | | | | |
| *Study 4* | | | | |
| H2b: Choice satisfaction<br>H3: Preference fluency | Online experiment | 196 college students | Student apartments | Choice satisfaction |
| **Role of brand equity** | | | | |
| *Study 5* | | | | |
| H4: Brand equity of choice alternatives | Online experiment | 444 Prolific workers | Tablets | Intention to choose |

technologies used by actual companies (see Web Appendix A). In doing so, we attempted to prevent artificiality in our stimulus material. In addition, we employed relevant choice contexts (e.g., travel, electronics, and food delivery) for the study participants. Moreover, we examined behavioral outcomes to present strong evidence for the proposed effects (Hulland & Houston, 2021).

## Study 1: Communication modality shapes consumer choice

We designed Study 1 to obtain initial insights into how communication modality (speaking vs. writing) influences consumer choice (hedonic vs. utilitarian alternative). In this study, we examine a typical choice situation in which consumers decide between two hotels for a weekend trip to a major city, one hedonic and one utilitarian alternative. The focal booking website offered consumers the opportunity to interact with a conversational agent to guide them through the booking process (similar to *KLM* airline's conversational agent; see Web Appendix A). Consumers could self-select to engage in speaking or writing when interacting with the agent. Using automated linguistic text analysis, we examined consumers' interactions with a conversational agent to analyze how communication modality influences verbalizing focus (H1) and, thus, explain how communication modality shapes their choice of a specific hotel (H2a). As mentioned previously, for across-product-subcategory choices, we propose that speaking leads to a greater focus on feelings and subsequently increases hedonic choices. In contrast, writing stimulates a greater focus on reasons and the choice of a utilitarian alternative.

### Method

**Design and sample** Study 1 used a one-factor between-subjects design with two conditions (communication modality: speaking vs. writing). We recruited 145 students from a large public university in Germany (66% female, $M_{age} = 23.08$, $SD = 2.89$, lab study) in exchange for course credit.

**Procedure and measures** Participants imagined that they were traveling to London for a weekend. We chose a trip to London because it would be attractive to the majority of participants and was a trip that many had already taken. The destination is within a reasonable distance for a weekend trip from the university where the experiment was conducted. Such a trip usually requires a budget that is available to many of the participants in the experiment, thus ensuring the relevance of the stimulus material to the target group. To book a hotel room, consumers saw the landing page of the fictitious website hotelfinder.com. We designed the hotelfinder.com landing page to be similar to the popular *tripadvisor.com* website. Participants were asked to interact with a conversational agent that was embedded on

hotelfinder.com and would guide them through the booking process. We followed Hildebrand and Bergner's (2021, p. 663) approach and employed a dialog-based agent, a conversational interface that "emulates the characteristics of a human-to-human conversation." The agent allowed participants to self-select between oral (33.1%) or written communication (66.9%). Neither consumer age (b = −.03, Wald $\chi^2(1) = .324$, $p = .569$) nor gender (b = .08, Wald $\chi^2(1) = .042$, $p = .838$) influenced modality choice.

Consumers started a conversation with the conversational agent, which prompted them to indicate when they would like to travel, what they would like to do during their trip, what is generally important to them about hotels, and what their available budget was. The content and sequence of questions from the agent were identical across conditions (see Web Appendix B for the script). We used a male voice for the agent that sounded as "natural" as possible.

Afterward, the conversational agent presented two hotels in random order (Web Appendix C shows the stimulus material for all studies). Both hotels were described with three attributes (Roggeveen et al., 2015) that were either hedonic (e.g., beautiful view over the city) or utilitarian in nature (e.g., close to a subway station). A pretest (N = 61; see Web Appendix B) confirmed that these attributes were perceived as expected and that both alternatives were equally likeable. Participants were then asked to choose a hotel and complete a short questionnaire. They rated items related to their perceived comfort with the digital interface, how challenging the digital interface was to use, their overall evaluation of hotelfinder.com and the online experience, and any possible privacy concerns (see Web Appendix B for mean values). All measures appear in Web Appendix D. The verbalized information served as a means to compare consumers' tendency to focus on feelings when speaking versus reasons when writing. We excluded two participants who did not follow our instructions (e.g., sending empty text messages). Our final sample consisted of 143 participants.

## Results

**Verbalizing focus** Two research assistants who were blind to our research hypotheses transcribed the recorded responses from the speaking condition, allowing us to compare the oral expressions to written texts from the writing condition. We employed linguistic inquiry and word count (LIWC-22) in this study and all other studies that examined consumers' verbalizing focus. LIWC is a widely used text analysis tool (e.g., Pezzuti & Leonhardt, 2023). In using LIWC, we focused on the analytic thinking measure, which is a summary variable measured on a 1–100 scale. According to Pennebaker et al. (2015, p. 21), "a high number reflects formal, logical, and hierarchical thinking," a style that fits with our understanding of the reason-based focus used during writing. "Lower numbers reflect more informal, personal, here-and-now, and narrative thinking," a style that closely aligns with our understanding of the feeling-based focus used during speaking. Thus, a score of 50 for the analytic thinking variable represents the "neutral point."

A one-factor analysis of variance (ANOVA) showed that consumers' verbalizing focus differed between the speaking and writing conditions ($F(1, 141) = 33.89$, $p < .001$, $\eta^2 = .194$). Participants in the speaking condition focused more on feelings ($M_{speaking} = 41.42$, SD = 19.19; lower than the scale midpoint [50]; $t(47) = -3.10$, $p = .003$), while participants in the writing condition focused more on reasons ($M_{writing} = 65.84$, SD = 25.65; higher than the scale midpoint [50]; $t(94) = 6.02$, $p < .001$). Thus, we found support for H1.

**Choice** A chi-square test revealed that in the speaking condition, a majority of participants preferred the hedonic hotel (56.3% [27/48]), whereas in the writing condition, a majority preferred the utilitarian hotel (69.5% [66/95]; $\chi^2(1) = 8.86$, $p = .003$), providing support for H2a.

**Mediation analysis** We employed mediation analysis (PROCESS Model 4; Hayes, 2018) to examine whether verbalizing focus (measured through LIWC's analytic thinking dimension) mediated the relationship between communication modality (0 = speaking; 1 = writing) and choice (0 = hedonic; 1 = utilitarian). We report bias-corrected bootstrap confidence intervals based on 5,000 bootstrap samples in all studies. The analysis showed that writing fostered a stronger focus on reasons, which led consumers to be more likely to choose the utilitarian alternative, while speaking triggered a greater focus on feelings, which resulted in consumers being more likely to choose the hedonic alternative (a = 24.42, SE = 4.20, $p < .001$; b = .017, SE = .008, $p = .025$; ab = .421, SE = .202, 95% CI [.050; .863]). These findings provide further support for H1 and H2a.

**Additional analyses** Further ANOVAs showed that participants in the speaking condition did not differ from those in the writing condition in terms of perceived comfort with the interface ($p = .545$), challenges with the interface ($p = .386$), service evaluation ($p = .981$), online experience ($p = .768$), or privacy concerns ($p = .467$). Detailed results appear in Web Appendix B.

## Discussion

Study 1 provides evidence that communication modality affects consumers' verbalizing focus (H1), which, in turn, influences consumers' choice (H2a). Individuals who spoke with the conversational agent were more likely to choose the

hedonic alternative, while those who wrote with the agent were more likely to choose the utilitarian alternative. Notably, even though writing currently seems to be more preferred than speaking (i.e., 66.9% of consumers in this study chose to write with the agent), no negative effects (e.g., on service evaluation) of oral interactions with a conversational agent could be identified. Finally, while this study examines the effect of communication modality on consumer choice in a context of unbranded choice alternatives, in an additional data collection, we demonstrate that our effects also hold for branded choice alternatives (see Web Appendix E for detailed results).

## Study 2: Impact of communication modality on choice—controlled modality

The design of Study 1 allowed consumers to self-select the communication modality with which they felt most comfortable. In Study 2, we randomly assigned participants to either the speaking or writing condition to rule out explanations of self-selection. Thus, this study tests whether the impact of communication modality on consumer choice is robust when consumers cannot self-select their communication modality.

### Method

**Design and sample** Study 2 consisted of a one-factor between-subjects design with two conditions (communication modality: speaking vs. writing). We recruited 114 college students from a large public university online (61% female, $M_{age} = 23.19$, SD = 3.22). As thanks for their participation, participants could enter a lottery for cinema gift cards.

**Procedure and measures** Study 2 investigated a common choice situation, in which consumers chose a movie from several alternatives shown at a cinema. We asked participants to compose a voice message or text message via an instant messaging app in which they provided thoughts and feelings about the choice alternatives. The task was similar to Indian cinema chain *PVR*'s use of a conversational agent. *PVR* enables consumers to contact a conversational agent via an instant messaging app to ask questions about movies and make bookings (see Web Appendix A). In this study, participants did not receive a response to their message, which served to eliminate the possibility of potential effects on consumer choice being driven by a conversational agent's response.

We randomly assigned participants to either the speaking or the writing condition. Then, we presented them with a cinema brochure that included descriptions of two recently launched movies, with one movie being hedonic (action movie) and the other being utilitarian in nature (documentary). The order of the movies was randomized. The descriptions included information about the movie plot and a picture of the movie poster. A pretest (N = 43; see Web Appendix F for results) confirmed that both movies were equally likeable and that the action movie was perceived as hedonic (i.e., entertaining), while the documentary was perceived as utilitarian (i.e., informative; procedure adapted from Savary et al., 2015).

Next, participants evaluated both movies using an instant messaging app that allowed them to send voice and written messages to others. Specifically, participants opened the app on their smartphones and created a new message. We asked participants to generate either a voice message (speaking condition) or a text message (writing condition). Participants sent the message to an instant messaging account that, unbeknownst to the participants, was operated by the study coordinator. Finally, participants chose the alternative that they would be most willing to watch in the cinema. To motivate realistic choices, participants were informed that they could win tickets for the movie they chose. We used a one-item measure to control for prior experience and excluded one participant who stated that he had already heard about one of the movies. We also excluded six participants who did not follow our instructions (e.g., sending a voice message without speaking or an empty text message). Our final sample consisted of 107 participants.

### Results

**Verbalizing focus** Two research assistants transcribed the recorded data from the speaking condition. Again, we employed LIWC-22 to analyze verbalizing focus. An ANOVA showed that verbalizing focus differed between the speaking and writing conditions ($F(1, 105) = 25.95$, $p < .001$, $\eta^2 = .198$). Participants in the speaking condition focused more on feelings ($M_{speaking} = 31.08$, SD = 27.03; lower than the scale midpoint [50]; $t(52) = -5.10$, $p < .001$), while participants in the writing condition focused more on reasons ($M_{writing} = 57.29$, SD = 26.19; higher than the scale midpoint [50]; $t(53) = 2.05$, $p = .046$). Thus, we found support for H1.

To test the robustness of the verbalizing focus, we used the Evaluative Lexicon (Rocklage et al., 2018), an alternative text analysis measure that is also used frequently in marketing research. We obtained results similar to those reported above (see Web Appendix F for further details).

**Choice** A chi-square test showed that in the speaking condition, a majority of participants preferred to watch the action movie (hedonic product; 66.0% [35/53]), whereas in the writing condition, a majority preferred the documentary

(utilitarian product; 63.0% [34/54]; $\chi^2(1) = 9.01$, $p = .003$), providing further support for H2a.

**Mediation analysis** Mediation analysis (PROCESS Model 4) with communication modality (0 = speaking; 1 = writing) as the independent variable, choice (0 = action movie/hedonic; 1 = documentary/utilitarian) as the dependent variable, and verbalizing focus (measured through LIWC's analytic thinking dimension) as the mediator showed that writing fostered a greater focus on reasons, which subsequently increased the likelihood that consumers chose the utilitarian product; in contrast, speaking triggered a greater focus on feelings, which increased the likelihood that consumers chose the hedonic product (a = 26.214, SE = 5.146, $p < .001$; b = .016, SE = .008, $p = .043$; ab = .412, SE = .245, 95% CI [.010; .993]). These results serve as further evidence for H1 and H2a.

### Discussion

Study 2 provides further support that communication modality affects the verbalizing focus (H1) and influences the consumer's choice (H2a). Thus, the key effects we investigate are consistent across both free choice (as shown in Study 1) and controlled choice of communication modality, thereby ruling out self-selection concerns. It is important to note that this study used interactions via an instant messaging app, and consumers did not receive a response to their message, thereby ruling out the possibility of the findings being driven by a conversational agent's response.

## Study 3: Impact of communication modality on food choices

We conducted Study 3 (N = 152, 60% female, $M_{age} = 23.29$, SD = 3.55, lab study) to investigate the generalizability of our findings in a food delivery context where interactions with conversational agents are highly feasible and examine the quantity of food that consumers choose (Biswas et al., 2023) as an additional outcome that is highly relevant in a food delivery context and could possibly be triggered by the communication modality. In this study, consumers used a digital assistant to place an order with a new delivery service, either by speaking to the digital assistant or by writing in the digital assistant's app (similar to *GrubHub*'s food delivery service skill on Amazon's Alexa; see Web Appendix A). Consumers were asked to choose one option from a set of two hedonic snacks (i.e., cheesy pizza balls and deep-fried rice balls) and two utilitarian snacks (i.e., vegan meatballs, herb cheese balls). The results demonstrate that consumers writing (vs. speaking) to the digital assistant were more likely to choose utilitarian food items, thus providing support for H2a. In addition, consumers ordered lower quantities of food items when writing (vs. speaking). The results of this study have important implications for consumer welfare and healthy food choices. We report the study in full detail in Web Appendix G.

## Study 4: Matching communication modality with product type increases choice satisfaction

In Studies 1-3, we examined product types consumers choose in the context of across-product-subcategory choices (i.e., choosing between hedonic and utilitarian products). Study 4 investigates the impact of matching the communication modality with the product type on a key outcome for within-product-subcategory choices (i.e., choosing between several hedonic or several utilitarian products), consumers' choice satisfaction (H2b). We also shed light on the process potentially underlying this effect by exploring preference fluency (H3).

### Method

**Design and sample** We used a 2 (communication modality: speaking vs. writing) × 2 (product type: hedonic vs. utilitarian) between-subjects design and recruited 196 students from a large public university (67% female, $M_{age} = 22.91$, SD = 2.91, lab study) in exchange for course credit.

**Procedure** The participants received descriptions and photos of three recently listed student apartments that differed in terms of four attributes, which were either hedonic (e.g., view from the apartment) or utilitarian (e.g., distance to central city) in nature. A pretest (N = 42; see Web Appendix H) confirmed that these attributes were perceived as expected. Then, participants read that Mia, a conversational agent from the university housing division (similar to the *Lehman College* "Lightning Bot"; see Web Appendix A), would like to help them make their choice. Following Longoni and Cian (2022), we programmed the agent as follows: "Hello, I am Mia. I would like to help you with your choice. Often you know best what you like and what is important to you. Please tell me what you think and feel about the alternatives." The participants were then randomly assigned to respond to the agent's question by either speaking or writing. Five participants did not follow our instructions and were excluded. Our final sample consisted of 191 college students. Afterward, participants made their choice and then responded to items on choice satisfaction (e.g., "I am satisfied with my choice"; Zhang & Fitzsimons, 1999; α = .82) and preference fluency (e.g., "It was easy for me to evaluate the choice alternatives"; Novemsky et al., 2007; α = .86). The distribution of product

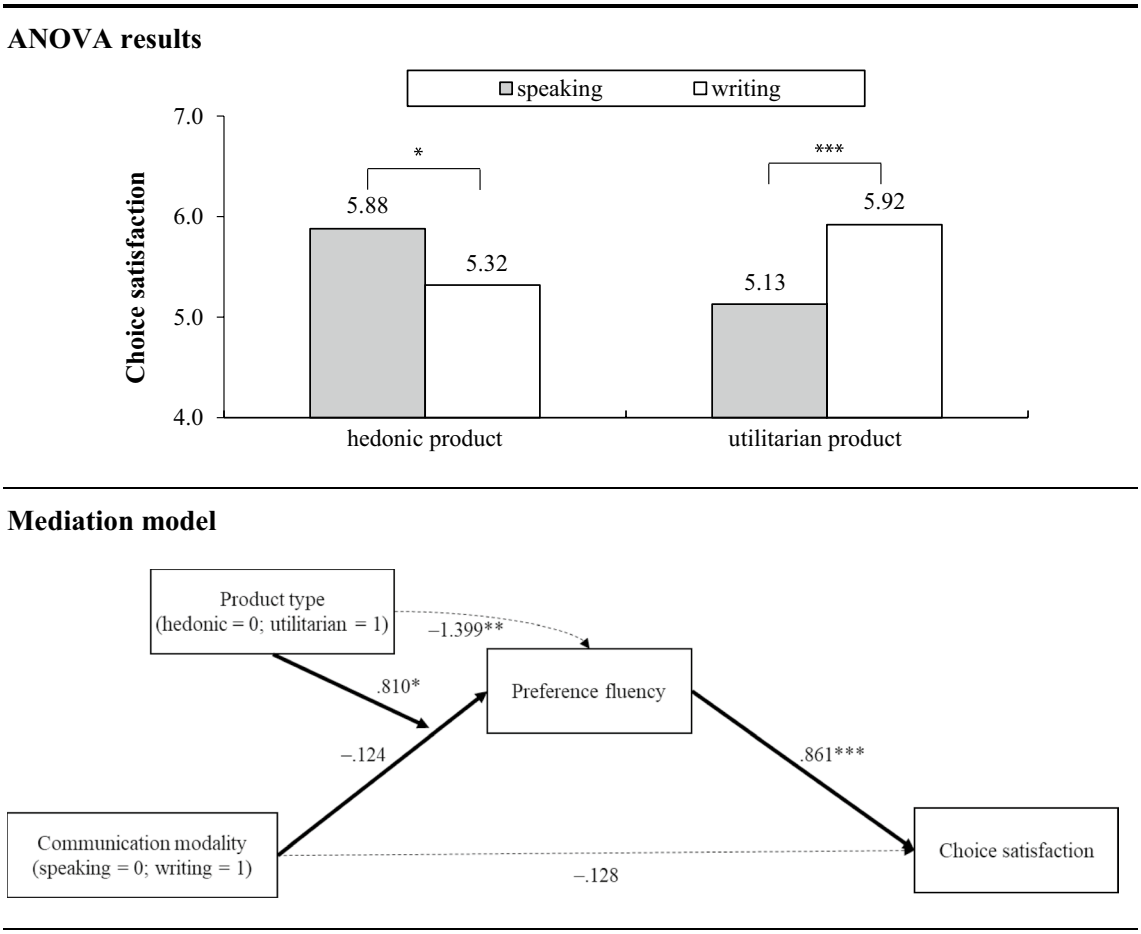


**Fig. 2** Choice satisfaction as a function of communication modality and product type (Study 4)

choices was similar across both the speaking and writing conditions ($\chi^2(2) = 1.12$, $p = .572$).

## Results

**Choice satisfaction** A two-way ANOVA revealed a significant interaction between communication modality and product type ($F(1, 187) = 17.15$, $p < .001$, $\eta^2 = .084$; see Fig. 2). For the hedonic condition, participants reported greater choice satisfaction when speaking (vs. writing) about the alternatives ($M_{speaking} = 5.88$, $SD = 1.06$ vs. $M_{writing} = 5.32$, $SD = 1.20$, $F(1, 187) = 5.93$, $p = .016$, $\eta^2 = .031$), while for the utilitarian condition, participants were more satisfied with the choice when writing (vs. speaking) about the alternatives ($M_{speaking} = 5.13$, $SD = 1.22$ vs. $M_{writing} = 5.92$, $SD = .99$, $F(1, 187) = 14.74$, $p = <.001$, $\eta^2 = .059$). This result supports H2b.

**Mediation** We conducted mediation analysis (PROCESS Model 7, see Fig. 2) with communication modality as the independent variable, product type as the moderator, preference fluency as the mediator, and choice satisfaction as the dependent variable. The analysis provided evidence of moderated mediation (index = .697, SE = .280, 95% CI [.167; 1.271]). We found a significant indirect effect on choice satisfaction through preference fluency that was positive when writing (vs. speaking) about utilitarian products (ab = .591, SE = .197, 95% CI [.203; .983]). When writing (vs. speaking) about hedonic products, the effect was negative but not significant (ab = –.107, SE = .190, 95% CI [–.495; .247]). Together, these findings provide partial support for H3.

## Discussion

With Study 4, we provide evidence for the positive effects of matching the communication modality with the product type for consumer decision-making by showing that consumers were more satisfied with a choice when speaking about hedonic products and writing about utilitarian products. Moreover, Study 4 sheds light on the underlying role of preference fluency.

## Study 5: The role of the brand equity of choice alternatives

Study 5 extends our previous studies in two ways. First, we focus on a situation where consumers can choose between a low- and a high-equity brand and examine how the impact of the communication modality on choice differs for a low- versus a high-equity brand. We hypothesize that a match between communication modality and product type has a stronger positive effect on intention to choose for low-equity brands than for high-equity brands (H4). To enhance managerial relevance and derive important implications for brand management, this study investigates real brands, which is necessary to examine the impact of brand equity on consumer decision-making outcomes (i.e., hypothetical brands have no equity). Second, to formally test whether our results differ by assignment method, we examine whether the impact of communication modality on intention to choose varies under a free versus controlled choice of communication modality (procedure adapted from Giebelhausen et al., 2016).

### Method

**Design and sample** Study 5 used a 2 (communication modality: speaking vs. writing) × 2 (brand equity of choice alternative: low vs. high) × 2 (assignment method: free vs. controlled choice of communication modality) between-subjects design. We recruited 476 participants on Prolific (41% female, $M_{age}$ = 41.49, SD = 13.71, online study) in exchange for monetary compensation of $2.50.

**Procedure and measures** Participants were provided with images of two different brands of tablets. We informed participants that both tablets are ideal for entertainment purposes (i.e., watching Netflix, playing online games, and viewing and editing photos; procedure based on Sela & Berger, 2012). We restricted this study to a hedonic product context to simplify the experimental design. We manipulated brand equity by presenting two brands that manufacture tablets, a high-equity brand and a low-equity brand. We selected both brands based on US tablet market shares (procedure based on Pratt et al., 2023). We used Apple (52% US market share) as the high-equity brand and Acer (0.3%; Statcounter, 2023) as the low-equity brand. The brand order was randomized. Following Mafael et al. (2022), we used real brands to manipulate brand equity between choice alternatives rather than a scenario technique because brand equity depends on the value of a brand name that is formed over time. To control for price perceptions, all brands were equally priced.

Participants then read that an online electronics retailer wanted them to test a new conversational agent (similar to the agent used by US electronics retailer *Newegg*; see Web Appendix A), Aria, which had been recently implemented in its web store. We programmed the agent to prompt consumers to provide their thoughts and feelings about buying a tablet and to indicate what is important to them in buying a tablet. The participants were then randomly assigned to the free- or the controlled-modality condition. In the free-modality condition, participants self-selected whether they wanted to speak (33.8% of all participants) or write (66.2%) with the conversational agent. Neither consumer age (b = −.01, Wald $\chi^2(1) = .637$, $p = .425$) nor gender (b = −.20, Wald $\chi^2(1) = .891$, $p = .345$) influenced modality choice. In the controlled-modality condition, participants were randomly allocated to the speaking or the writing condition and asked to respond to the agent's question by either speaking or writing.

Afterward, participants were randomly assigned to the low- or high-brand-equity conditions and asked to rate their intention to choose either the low- or the high-equity brand using three items (e.g., "How likely would you be to purchase the tablet by [brand]?"; inspired by Berry et al., 2017 and Ding & Zhang, 2020; α = .93). In addition, as a manipulation check, participants completed four items regarding the brand equity of the presented brands (e.g., "It makes sense to buy [brand] instead of another brand"; Yoo et al., 2000, see also Heinberg et al., 2020; α =.98). Finally, participants rated four items related to hedonism as a further manipulation check (e.g., "not fun vs. fun"; Sela & Berger, 2012; α =.94). We excluded 32 participants who did not follow our instructions. Our final sample consisted of 444 participants.

### Results

**Manipulation check** We found that Acer was perceived as having lower brand equity (M = 3.07, SD = 1.67) than Apple (M = 4.51, SD = 2.19; $F(1, 442) = 60.50$, $p < .001$, $\eta^2 = .120$). Thus, our manipulation of brand equity was effective. In addition, the framing of both products for entertainment was perceived as hedonic in nature ($M_{Acer}$ = 5.00, SD = 1.31, higher than the scale midpoint [4], $t(224) = 11.47$, $p < .001$; $M_{Apple}$ = 5.22, SD = 1.63, higher than the scale midpoint [4], $t(218) = 11.12$, $p < .001$), reflecting that our product type manipulation worked as intended.

**Verbalizing focus** As in our previous studies, two research assistants transcribed the recorded speaking interactions and we used LIWC-22 (*analytic thinking* measure) to analyze verbalizing focus. A two-way ANOVA showed only a significant main effect of communication modality, indicating

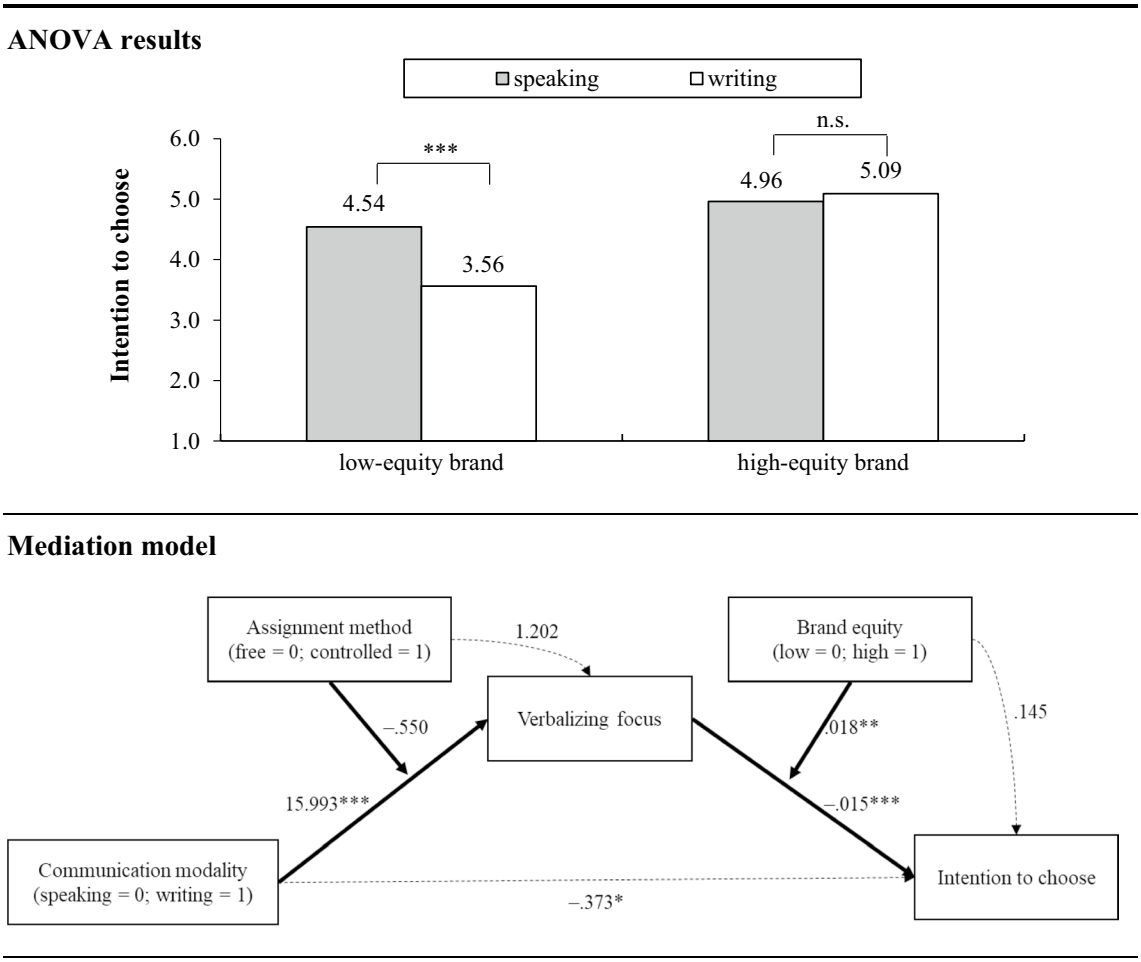


**Fig. 3** Intention to choose a product as a function of communication modality and brand equity (Study 5)

that the verbalizing focus was different between speaking and writing ($F(1, 440) = 32.12$, $p < .001$, $\eta^2 = .068$). Consumers in the speaking condition were more likely to focus on feelings ($M_{speaking} = 43.37$, $SD = 26.26$; lower than the scale midpoint [50]; $t(179) = -3.39$, $p < .001$), while those in the writing condition were more likely to focus on reasons ($M_{writing} = 58.91$, $SD = 29.28$; higher than the scale midpoint [50]; $t(263) = 4.94$, $p < .001$). This provides additional support for H1.

**Intention to choose** A three-way ANOVA showed significant main effects of communication modality ($F(1, 436) = 4.08$, $p = .044$, $\eta^2 = .009$), brand equity ($F(1, 436) = 33.01$, $p < .001$, $\eta^2 = .070$), and assignment method ($F(1, 436) = 8.89$, $p = .003$, $\eta^2 = .020$) and a significant communication modality × brand equity two-way interaction ($F(1, 436) = 11.82$, $p < .001$, $\eta^2 = .026$). The three-way interaction was not significant ($F(1, 436) = .00$, $p = .970$, $\eta^2 = .000$). This result indicates that the assignment method (free- vs. controlled-modality choice) did not influence the communication modality × brand equity interaction.

With regard to the significant communication modality × brand equity interaction, for the low-equity brand, intention to choose was higher when speaking ($M = 4.54$, $SD = 1.66$) versus writing ($M = 3.56$, $SD = 1.56$; $F(1, 440) = 17.81$, $p < .001$, $\eta^2 = .039$; see Fig. 3). In contrast, for the high-equity brand, there was a nonsignificant difference between the speaking condition ($M = 4.96$, $SD = 1.84$) and the writing condition ($M = 5.09$, $SD = 1.75$; $F(1, 440) = .30$, $p = .588$, $\eta^2 = .001$). These results provide support for H4. In further support, we analyzed the communication modality × brand equity interaction separately for the free- and controlled-modality conditions. The results provide additional evidence for H4 (see Web Appendix I)[2].

[2] Note that the main effect of communication modality on intention to choose was not significant for either the free- or controlled-modality conditions in these separate analyses. We assume that in this context Apple was so attractive to consumers that no further nudge (i.e., the modality effect) was needed for consumers to choose Apple.

**Mediation** We conducted mediation analysis (PROCESS Model 21; see Figure 3) with communication modality as the key independent variable, intention to choose as the dependent variable, verbalizing focus as the mediator, assignment method as the moderator influencing the "a" path between communication modality and verbalizing focus, and brand equity influencing the "b" path between verbalizing focus and intention to choose. The analysis provides support for moderated mediation by brand equity ($index_{free\text{-}modality}$ = .289, SE = .126, 95% CI [.081; .572]; $index_{controlled\text{-}modality}$ = .278, SE = .117, 95% CI [.085; .549]). In particular, for the free-modality condition, the indirect effect on intention to choose through verbalizing focus was stronger for the low-equity brand (ab = –.232, SE = .086, 95% CI [–.418; –.086]) than for the high-equity brand (ab = .056, SE = .077, 95% CI [–.085; .226]). Similarly, for the controlled-modality condition, the indirect effect on intention to choose through verbalizing focus was stronger for the low-equity brand (ab = –.224, SE = .082, 95% CI [–.400; –.086]) than for the high-equity brand (ab = .054, SE = .074, 95% CI [–.083; .217]). Importantly, the results do not support moderated mediation by assignment method ($index_{low\text{-}equity}$ = .008, SE = .083, 95% CI [–.158; .182]; $index_{high\text{-}equity}$ = –.002, SE = .033, 95% CI [–.079; .066]). Together, these findings provide additional support for H4. We also conducted a further mediation analysis in which we collapsed the free- and controlled-modality conditions and used brand equity as the only moderator. Importantly, we found similar results as for the initial analysis (see Web Appendix I).

### Discussion

Study 5 provides important implications for brand managers by showing how brand equity influences the impact of the communication modality on intention to choose. In situations with dissimilar brand equity between choice alternatives, we found that a match between communication modality and product type has a stronger positive effect on intention to choose for low-equity brands than for high-equity brands. This finding shows that the modality employed can have favorable effects for low-equity brands in situations that also involve a high-equity brand.

Footnote 2 (continued)

In other words, the effect of Apple on consumers could have been so strong that the overall (main) effect of the communication modality (when Apple and Acer were collapsed) disappeared.

## General discussion

Many companies are increasingly deploying conversational agents. Thus, a key question is whether and when it is advisable to implement technologies that allow text-based interactions (which are currently the norm) or voice-based interactions (which are rapidly evolving). Academic researchers are also increasingly interested in the impact of these agents on the consumer decision-making process. Across five studies, our results reveal that matching communication modality with product type (i.e., speaking about hedonic products; writing about utilitarian products) shapes consumers' choices and increases their choice satisfaction. Specifically, speaking fosters a feeling-based verbalizing focus, while writing triggers a reason-based focus. When this focus matches consumers' mindset in evaluating the product type, consumers perceive their verbalizing as fitting the choice which increases preference fluency. The effects of matching communication modality with product type are also robust to self-selection effects (i.e., they emerge in both free and controlled choice of communication modality). Moreover, we show that speaking stimulates the choice of unhealthier foods, while writing motivates the choice of healthier foods. Finally, the matching effect of communication modality and product type is stronger for low-equity brands than for high-equity brands.

### Managerial implications

The findings of this research have important implications for practitioners (see Table 2). In particular, we offer insights into what communication modality to use for conversational agents to effectively influence consumer choice and increase choice satisfaction, how to encourage healthier food choices, and how to manage the modality choice for low-equity brands.

**Most effective modality for interacting with conversational agents** Companies and platforms deploy conversational agents on their websites to help consumers make choices by asking "Tell me exactly what product you're looking for" (e.g., *Decathlon* chatbot; see also further examples in Web Appendix A and additional use cases from *Best Buy*, *Jack & Jones*, *Staples, Sephora*, *Toyota*). A key implication of our findings is that companies should implement conversational agents that encourage speaking about hedonic products and writing about utilitarian products (see Studies 1 and 2). Specifically, when selling primarily hedonic products, companies should consider the use of voice-based conversational agents on their company websites. These agents can guide consumers through the buying process through oral dialog and recommend relevant products. For example, the popular

**Table 2** Overview of main findings and managerial implications

| Key finding(s) | Managerial implications | Examples |
|---|---|---|
| *Studies 1 and 2* | | |
| Writing fosters a stronger reason focus and increases the choice of utilitarian products. Speaking increases a feeling focus and leads to higher choice shares of hedonic products.<br>Results are robust for free and controlled choice of communication modality. | *Key implication:* Design experiences that encourage speaking about hedonic products and writing about utilitarian products. | Hi Jiffy's hotel voicebot<br>Jack & Jones' chatbot |
| | *For hedonic products/shopping motivation:*<br>Implement voice-based conversational agents on websites.<br>Use current applications and skills for digital assistants (e.g., Amazon's Alexa and Google Assistant).<br>Present a phone number on the website. | H&M's personalized advice<br>Expedia's travel assistant (via Google Assistant) |
| | *For utilitarian products/shopping motivation:*<br>Implement text-based conversational agents (e.g., chatbots) on company websites.<br>Encourage interactions with text/messengers (e.g., WhatsApp).<br>Launch social online shopping apps that employ written interactions between individuals. | Ikea's chatbot<br>Decathlon's use of WhatsApp |
| | *For mixed products/shopping motivation*:<br>Program conversational agents to enable either written (for utilitarian products) or oral interactions (for hedonic products).<br>Enable consumers to choose a communication modality. | Bank of America's "Erica"<br>KLM's "Blue Bot" |
| *Study 3 (reported in full detail in Web Appendix G)* | | |
| Writing leads to more utilitarian (healthy) food choices and decreases the quantity of food items purchased, while speaking leads to more hedonic (unhealthy) food choices and increases the quantity of food items purchased | Pursuing and enriching text-based interactions as an avenue to cope with rising pressures regarding healthy choices.<br>Nudging consumers to use written interactions represents a promising opportunity for food retailers to bolster brand image. | Tesco's mobile app<br>Shopping list on Amazon fresh app |
| *Study 4* | | |
| Consumers are more satisfied with choices made when speaking about hedonic products and writing about utilitarian products. The effect is mediated by preference fluency. | Changing, adapting, or encouraging the communication modality that fits best with the product alternatives increases consumers' satisfaction with their choices. | Domino's mobile app |
| *Study 5* | | |
| A match between communication modality and product type has a stronger positive effect on intention to choose for low-equity brands than for high-equity brands (in situations of dissimilar brand equity between choice alternatives). | Low-equity brands benefit most by adapting the matching communication modality when competing with high-equity brands (e.g., at multibrand retailers). | Best Buy's digital company experts |

*Golden Nugget Hotel* in Las Vegas offers the opportunity to speak with a conversational agent to find a suitable room and service package. Based on past purchasing behavior, conversational agents can also be used to anticipate consumer preferences and suggest relevant products. For example, Swedish clothing company *H&M* employed a voice-based conversational agent on its website that helps consumers find outfits and provides individual style advice.

Additionally, firms may develop applications for smart devices (e.g., Amazon Alexa "skills" and applications on Google Assistant) that allow consumers to perform specific actions, such as product ordering, using voice commands. *Expedia*, for example, enables voice-based booking of trips via Google Assistant (through its "Travel Guide"). Moreover, companies could prominently display their phone number on their website (which is now often difficult to find) and encourage consumers to contact the company by phone. A good example of this strategy is the US online electronics retailer *Newegg*. Depending on the issue, these calls may then be handled by voice-based conversational agents (for simple or common problems) or service employees (for more complicated problems). We acknowledge that writing to conversational agents currently seems to be preferred over speaking. However, as speech technology improves and consumers become more accustomed to it, consumers should also become more accepting of this option.

When selling primarily utilitarian products, companies should employ text-based conversational agents on their websites. For example, *IKEA*'s chatbot Anna answers questions about products and spare parts, prices, delivery, and opening hours. Furthermore, we suggest that firms encourage interactions with conversational agents via instant messaging apps (e.g., WhatsApp), which are typically text-based. French sporting goods retailer *Decathlon* uses a conversational agent to respond to customer queries via WhatsApp. Another fruitful avenue for companies involves the launch of new social online shopping apps that encourage text-based group interactions through group discounts. Specifically, by offering group discounts, companies may encourage consumers to shop and interact with one another through written communication.

Companies selling both utilitarian and hedonic products or products that have both hedonic and utilitarian aspects can program the conversational agent to enable either written or oral interactions based on the product type. For example, electronics retailer *Best Buy* might encourage speaking interactions with a conversational agent for electronics with primarily hedonic (i.e., entertainment) purposes (e.g., tablets, gaming equipment, sound bars) and written interactions for electronics with primarily utilitarian (i.e., work) purposes (e.g., printers, projectors, major appliances). This approach can be implemented by displaying a link in the product description to a voice-based conversational agent (for hedonic products) or a text-based conversational agent (for utilitarian products). In addition, online retailers such as *Amazon* may identify the product type based on consumers' search queries (i.e., whether consumers are searching for a hedonic or utilitarian product) and enable interactions with either a voice- or a text-based conversational agent.

It is important to note that given the rapid advances in speech technology, companies do not need to develop their own conversational agents. Rather, large technology platforms such as *Google Dialog* offer manageable speech-based interfaces (e.g., *Google WaveNet*) that can be easily integrated and customized into existing infrastructure (see also Zierau et al., 2023). Moreover, companies may offer consumers the option of choosing between text- and voice-based conversational agents. For example, *Bank of America* introduced a virtual assistant with which consumers can interact either orally or by writing (see also Web Appendix A). Consumers could be given the option to interact with an agent by either texting or speaking depending upon their preference. In addition, consumers may have a personal preference for speaking or writing in general. Offering a choice between a text- or voice-based agent allows companies to enable consumers to interact in their desired mode.

**Adapting the communication modality can make consumers more satisfied with their choices** In addition to demonstrating the impact of communication modality on choice, we provide evidence that consumers are also more satisfied with their choices when the modality used matches the product type (i.e., hedonic vs. utilitarian; see Study 4). Thus, practitioners can help increase consumers' satisfaction with their choices simply by changing or enabling a matching interaction with a conversational agent. For example, to enhance consumers' choice satisfaction, online retailers of purely hedonic products (e.g., perfume and wine) might consider enabling consumer interactions with conversational agents on their website using voice-based technology. Similarly, retailers of convenience food and fast-food delivery services (a hedonic purchase) might consider adopting voice-based online ordering to improve choice satisfaction. *Domino's Pizza* has developed a voice-based conversational agent that enables consumers to place orders. The agent is embedded in the company's mobile app and can be activated by speaking a command.

**The communication modality as a means to encourage healthier choices** Our findings demonstrate that written interactions with conversational agents may lead to healthier choices (see Study 3). This suggests that food retailers should continue to use and expand text-based interactions with conversational agents to address increasing pressures to motivate healthy choices and to bolster their brand image. Specifically, we recommend the use of mobile

grocery shopping apps that employ text-based interactions. UK grocer *Tesco*, for example, encourages consumers to use its mobile app, which employs text-based input and allows items to be selected online and then collected at pick-up points. When a consumer orders food online (e.g., from *Grubhub*), the order is usually placed through written interactions. In contrast, grocery retailers, restaurants, and food delivery services should be cautious when investing in voice-based agents if the goal is to discourage unhealthy food choices.

**The impact of communication modality for low- and high-equity brands** When brand equity is dissimilar between choice alternatives, our research shows that matching the communication modality used in interactions with conversational agents to the product type is more effective in shaping consumer choices for low-equity brands than for high-equity brands. Thus, for low-equity brands, communication modality matching can exert a positive influence on the intention to choose these brands (see Study 5), and we suggest that these brands actively manage their communication modalities. Particularly in situations where low- and high-equity brands are presented side by side (e.g., at online electronics retailers), low-equity brands (e.g., *Acer*) should encourage consumers to speak when choosing between hedonic alternatives or to write about utilitarian alternatives. As mentioned previously, this approach can be implemented by providing links to both a voice-based and a text-based conversational agent. Moreover, low-equity brands can launch brand promotions at multibrand retailers to motivate voice- or text-based interactions (e.g., "Tell us what you like most about our new product via voice/text message and receive $X cash back").

## Academic implications

Our paper has four important academic implications. First, our research sheds light on the distinct effects of consumers' oral and written interactions with conversational agents on choice and choice satisfaction. In particular, we address an important gap in the literature by providing insights into two important subsequent consequences of speaking and writing for consumer decision-making (i.e., choice and choice satisfaction). Thus, we contribute to the literature by showing that the effects of the communication modality go beyond previous findings related to flow-like consumer experiences (Zierau et al., 2023) and service satisfaction (Rzepka et al., 2022). Specifically, by highlighting the changes in these managerially relevant downstream variables, this study goes beyond the recent work of Berger et al. (2022), which focused on the more immediate effects of verbalizing, such as what consumers express in oral (vs. written) online reviews and how this affects others' interest in the product or service mentioned in a review.

Second, we highlight the interplay between communication modality and product type (hedonic vs. utilitarian) in influencing choice and choice satisfaction, thereby introducing an important matching effect. We go beyond previous findings (Berger & Iyengar, 2013; Berger et al., 2022; Shen & Sengupta, 2018) by demonstrating that the communication modality-induced verbalizing focus shapes choice and increases choice satisfaction when it matches the product type. Thus, we speak to the literature on the role of a feeling- or reason-based focus in decision-making. Specifically, previous research has not considered that speaking and writing may influence consumer decision-making. In contrast, we document that communication modality is an important driver of whether consumers employ feelings or reasons as an evaluative basis in choice situations. By identifying that the consequences of a feeling- or reason-based focus in decision-making depend on the product type being evaluated, our findings meaningfully build on the premise that choices and judgments are more valid and reliable when the properties of a task match the type of processing being employed (Hammond et al., 1987).

Interestingly, our findings show that speaking or writing about food alternatives with conversational agents influences not only the composition of but also the quantity in their shopping baskets. We go beyond previous findings by demonstrating that writing (vs. speaking) increases the choice of healthy (i.e., utilitarian) foods. In addition, consumers are more likely to order lower quantities of food items when writing (vs. speaking). These findings may thus qualify previous research (e.g., Huyghe et al., 2017) by demonstrating that online shopping baskets may be healthier and more economic, particularly when consumers interact with text-based conversational agents to order food. These positive effects may, however, disappear when ordering via voice-based conversational agents.

Third, we find that a communication modality "match" can trigger the perception that forming a preference for an alternative is easy (i.e., preference fluency), thereby increasing choice satisfaction. This finding highlights the influence of metacognitive "feeling right" experiences on consumer decision-making. Prior studies have examined how the number of reasons consumers generate for a choice as well as external factors, such as the font used in product descriptions, affect preference fluency (Novemsky et al., 2007). Our findings expand this literature by showing that the type of reason, whether emotional or rational, induced by speaking or writing stimulates preference fluency. Thus, the choice between oral or written interactions with conversational agents can be a simple means to facilitate decision-making processes.

Fourth, we identify an important, managerially relevant factor that influences the matching effect: brand equity of choice alternatives. We shed light on the interplay of communication modality and brand equity, two constructs that are key drivers of consumer decision-making outcomes but have not yet been investigated jointly. Our findings imply that any models that seek to determine consumers' choice and choice satisfaction should consider their communication modality in their interactions with conversational agents, the product type of their choice alternatives, and importantly, the brand equity of their choice alternatives.

### Limitations and future research

Our study investigated modality matching effects in the context of conversational agents. However, this effect may have relevance for other types of communications, such as advertising. It is possible that oral communication from external sources (e.g., video or audio ads) is more effective for hedonic products, while written communication (e.g., reading ads with words) is more effective for utilitarian products. Thus, we encourage future research to study whether the matching effect is also relevant in other contexts.

Furthermore, while this research examined an important factor that influences the matching effect, brand equity, further research is needed to identify additional boundary conditions. For example, it is possible that the modality effect on choice is attenuated when consumers receive recommendations from others that lead them to prefer a specific alternative.

This study investigated the impact of speaking and writing with conversational agents in lab and online experiments. While our experiments were designed to closely mirror real world interactions with conversational agents, we recognize that other factors may come into play when interacting with conversational agents on real websites. Thus, we suggest that future research conduct field studies and test whether our findings are robust in a more natural setting. Furthermore, to simplify the experimental design, we focused only on a hedonic product context in Study 5. Although we expect that the findings would be similar for a utilitarian product context, future research is needed to empirically test this assumption.

Finally, our research focused on studying modality effects with conversational agents in an online environment. However, our findings might also have relevance for physical store environments. For example, we conducted an initial field study in an offline context at a food court (N = 196, see Web Appendix J) and found evidence that the modality employed also shapes choices. Thus, existing and future technology can enable both speaking and writing with conversational agents in a physical retail environment (e.g., *AXA*, *KFC*, and *Walmart*; see Web Appendix A). For example, while shopping in a store, products could be displayed with a QR code that consumers could use to link to a voice-based conversational agent (especially for hedonic products) or a text-based conversational agent (especially for utilitarian products) using their smartphone. This approach would provide a valuable decision aid for consumers while also supporting the store's salespeople. As another example, *Nescafé*'s robot "Pepper" provides customer service for coffee machine purchases in Japanese stores and helps consumers make a choice. Thus, we suggest that future studies examine the impact of speaking and writing with conversational agents in physical stores.

## Conclusion

The use of voice-based conversational agents is on the rise, and a key question is whether and when it is advisable to implement technologies that enable voice-based rather than text-based interactions, which are currently the norm. By addressing this question, we shed light on a novel matching effect that shapes consumers' choices and enhances choice satisfaction. Thus, we offer valuable insights for current industry practice. We hope that this work inspires others to further explore the impact of communication modalities in marketing and beyond.

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### Declarations

**Conflict of interest** The authors declare that they have no conflict of interest.



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