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How Argument Numerosity Shapes Firm-Generated Content Effectiveness

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ABSTRACT

Despite the growing popularity of firm-generated content (FGC), defined as product-oriented communication that an organization initiates on its official social media pages, there is persistent uncertainty about its effectiveness. Some posts elicit positive responses while others do not, which raises questions about what firms can do to improve social media user responses to FGC and achieve their business goals. This research demonstrates that the number of arguments (i.e., the product attributes listed in the promotional message) included in FGC tends to benefit utilitarian products more than hedonic ones, which has systematic effects on users' perceptions of and responses to the FGC. In the contexts of FGC, argument numerosity can be effective in mitigating the tension and uncertainty related to online shopping (due to psychological risk), but we argue this is only the case for utilitarian products and not for hedonic ones. To test our predictions, we present five studies that represent a mix of controlled experiments with fictitious Instagram posts and an automated text analysis, on Twitter, of thousands of real branded tweets. As predicted, the results demonstrate that argument numerosity reduces the perceived psychological risk (manifested in the uncertainty and tension associated with typical social commerce behaviors), which in turn enhances users' engagement with FGC and purchase intention—but only for utilitarian products. These findings have important implications for firms and managers looking for actionable insights on how to improve the effectiveness of their FGC.

1 | Introduction

The recent evolution of the social media landscape has led to the proliferation of firm-generated content (hereafter FGC), which is defined as product-oriented communication that an organization initiates on its official social media pages (Kumar et al. 2016). Given that 43% of all consumers do their research about products on social media (Gomez 2023), it seems reasonable to presume that FGC is an important and commonly used marketing communication tool (Ashley and Tuten 2015; Alves, Fernandes, and Raposo 2016; Tyrväinen, Karjaluoto, and Ukpabi 2023).

Despite the marketing relevance of FGC past research suggest that its impact can vary across different industries. For example, the use of FGC has been found to have positive effects for companies in the movie (Cheng et al. 2021) and hotel industries (Kim, Park, and Kim 2023), but mix effects have been reported for healthcare organizations (Qiao, Huang, and Yan 2024) and technology firms (Lacka et al. 2022). Further, while some studies found that FGC can improve important business outcomes such as message sharing (e.g., Colicev, Kumar, and O'Connor 2019), other research reports divergent results, such as diminishing returns on customers (Homburg, Ehm, and Artz 2015), negative influence on purchase intention and little effect on brand attitude (Santiago, Borges-Tiago, and Tiago 2022). For example, a recent survey by a commerce experience platform (www.nosto.com) showed that only 13% of social media users find FGC to be important for their purchasing decisions. Fittingly, anecdotal

evidence suggests that firm-generated posts drive about seven times less engagement than user-generated content (Demeku 2023). Related to this issue, what is surprisingly lacking among previous studies on FGC effectiveness is an integrated approach to examine the collective effect of product type and message characteristics theoretically grounded in information processing and psychological factors that can possibly shape important social media performance metrics, such as engagement and purchase intention (see Table 1). This current work attempts to fill the research gap.

A core pillar of our theorizing is that consumers typically perceive a certain degree of psychological risk (i.e., uncertainty, discomfort, and tension; Hassan et al. 2006) when buying online. Psychological risk is crucial variable in the FGC context, because possible regrets and frustration due to the lack of sufficient product information in the promotional message may result in consumers experiencing mental pressure in the future due to their purchase decisions that did not meet their expectations (Fan, Shao, and Dong 2022). Higher levels of perceived uncertainty increase the likelihood of experiencing psychological risk, which might have negative effects on typical social commerce behaviors (e.g., engagement and purchase intention; Farivar, Turel, and Yuan 2017). Considering that 83% of online shoppers need assistance or more information to complete orders (Wertz 2017), reducing psychological risk seems to be crucial for achieving a variety of important social media goals such as engagement and purchase.

Here, we argue that one way to reduce the perceived psychological risk is by increasing the *number of arguments* included in FGC. Prior work on persuasion (e.g., the Elaboration Likelihood Model) suggests that increasing the number of arguments contained in a promotional message bolsters its persuasiveness—either by giving recipients more information to consider (e.g., Calder, Insko, and Yandell 1974) or by activating a simple heuristic like "the more arguments, the better" (Petty and Cacioppo 1984, p. 70). More persuasive messages are more likely to reduce the uncertainty related to product choice and therefore the possible mental pressure (i.e., perceived psychological risk) in the future due to their purchased decisions that did not meet their expectations.

We argue, however, that the ability of argument numerosity to reduce psychological risk essentially depends on the type of product being promoted. Specifically, we suggest that argument numerosity reduces psychological risk for utilitarian products (i.e., those that are primarily instrumental in nature; Dhar and Wertenbroch 2000), but not for hedonic products (i.e., those that are primarily affective in nature). Our focus on this product categorization, and not on other apparently similar ones (i.e., high vs. low involvement products; e.g., Holmes and Crocker 1987), is motivated by our belief that increasing the number of arguments can result in different effects for products that are mainly cognitive or emotional in nature and differ in terms of the processing strategies they imply, above and beyond how much consumers are involved in their purchase. Through our multimethod work—which encompasses an analysis of thousands of social media (specifically, Twitter) FGC posts across several industries, as well as four controlled experiments—we substantiate the aforementioned argument.

This research advances extant knowledge in different fields. First, we contribute to the literature on the role of content characteristics in shaping social media effectiveness. While prior research has suggested that certain characteristics of FGC, such as emotionality (Lee, Hosanagar, and Nair 2018), vividness (Colicev, Kumar, and O'Connor 2019), and interactivity (De Vries, Gensler, and Leeflang 2012) can affect social media effectiveness, there is scant research on how the number of arguments might affect consumer responses to FGC. We fill this gap in two ways: first, by analyzing the effect of the number of arguments on people's engagement with FGC and purchase intention; and second, by investigating whether and how this effect depends on the type of product promoted.

Second, we contribute to the literature on information processing and responses to utilitarian and hedonic products (Shao and Li 2021). While prior research has examined the different information processing strategies that people employ when evaluating information about utilitarian and hedonic products (Roggeveen et al. 2015), scholars have paid less attention to the online content characteristics used to promote such products. We explore the role of one such characteristic—the number of arguments—in shaping consumers' psychological and behavioral reactions to content promoting utilitarian versus hedonic products.

Third, we advance knowledge on the factors that influence online engagement and purchase intention. While there have been numerous empirical studies on the factors that positively affect online engagement and purchase intention, such as receptivity (Kumar et al. 2016), arousal (Cascio Rizzo et al. 2024) and image content (Li and Xie 2020), there has been little discussion about the negative ones. We fill this gap by exploring the effect of psychological risk on social media users' engagement and purchase intention in response to FGC. Finally, our research offers practical implications for firms and managers looking for insights on how to enhance the impact of their FGC communications. Specifically, we show that offering service support can reduce psychological risk, which in turn increases engagement with the FGC and purchase intention.

2 | Theoretical Background and Conceptual Framework

2.1 | How the Number of Arguments and Product Type Shape FGC Effectiveness

Despite the popularity and relevance of FGC, there is some ambivalence about its effectiveness. Indeed, branded posts demonstrate considerable variety in terms of engagement and purchase intention. Naturally, firms look to posts with substantial engagement (via likes, shares, or comments) to glean how content is resonating with consumers, which can then reveal more opportunities to prompt word-of-mouth referrals and sales (Kumar et al. 2016). Therefore, firms materially benefit from learning how to boost engagement (and purchases) through FGC.

Given the importance of FGC, a great deal of research has begun to examine which post characteristics can lead to

TABLE 1 | Literature review on the factors affecting firm-generated content effectiveness.

References	Method	Factors	Key findings
Ballester, Ruiz and Rubio (2021)	Field data	– Perceived enjoyment – Perceived originality	The perceived enjoyment and perceived originality of Instagram posts have a positive influence on engagement, which, in turn, affects consumers' recommendation behaviors.
Colicev, Kumar, and O'Connor (2019)	Field data	– Vividness – Volume – Valence of comments – Product type: durable versus nondurable goods	FGC *vividness* has the strongest relationship with consideration and purchase intent. FGC dimensions have larger positive relationships with awareness for durables and nondurables.
De Vries, Gensler and Leeflang (2012)	Field data	– Vividness – Interactivity – Valence of comments – Post content: informative versus entertaining – Post position	Vivid and interactive brand post characteristics enhance the number of likes. Moreover, the share of positive comments on a brand post is positively related to the number of likes.
Kumar et al. (2016)	Field data and Online survey	– Valence of FGC – Receptivity of FGC – Customer susceptibility – Users experience	Valence, receptivity and customer susceptibility of FGC have a positive impact, the effect of FGC receptivity is the largest.
Kwon et al. (2022)	Field data	– Colors: cool versus warm – Darkness – Saturation – Colorfulness	Cool colors are more appealing in B2B content, while warm colors work better in B2C content. Darker, less saturated, and more varied colors increase the effect of cool color.
Lu, Dinner and Grewal (2023)	Field data	– Volume and valance of UGC – Type of UGC – User type: follower versus nonfollower	Impressions of FGC by followers of firm accounts drive the effect of FGC on UGC. FGC by movie accounts is more effective than that by actors and studios. Firms' regular posts with a movie-specific hashtag are more effective than replies, retweets, and posts without the hashtag.
Tyrväinen et al. (2023)	Meta-analysis	– Product value – Product durability – Information credibility – Information usefulness – Positive emotions	FGC information quality, information credibility, information usefulness, and positive emotions have stronger effects on brand loyalty for nondurable products.
Villarroel Ordenes et al. (2019)	Text mining	– Alliteration and repetitions – Image acts	The use of rhetorical styles and cross-message compositions enhance consumer message sharing. The presence of visuals increases the ability for message sharing.
Wang et al. (2024)	Deep learning analysis	– Pix-level visual complexity – Object-level visual complexity – Image brightness	Pixel-level complexity increases both the number of likes and shares. Object-level complexity has a U-shaped relationship with the

(Continues)

TABLE 1 | (Continued)

References	Method	Factors	Key findings
			number of likes. Image brightness mitigates the effect of pixel-level complexity on likes but amplifies the effect on shares.
Current research	Automated text analysis and Controlled experiments	– Product type: hedonic versus utilitarian – Number of arguments – Psychological risk	Argument numerosity reduces the perceived psychological risk which in turn enhances users' engagement with FGC and purchase intention, but only for utilitarian products.

greater user engagement and purchase intentions. De Vries, Gensler and Leeflang (2012) found that vivid and interactive posts yield strong levels of consumer engagement. Villarroel Ordenes et al. (2019) demonstrated that other FGC characteristics—such as assertiveness, expressiveness, directiveness, and the use of rhetorical styles—might increase engagement (i.e., sharing). Similarly, Lee, Hosanagar, and Nair (2018) uncovered that brand personality-related posts increase engagement, but informational posts increase clicks on referenced external websites. Qiao and Wei (2021) found that providing social support has a positive impact on both consumer engagement with social commerce platforms and purchase intention. Recently, Cascio Rizzo et al. (2024) demonstrated that high arousal language increase engagement with social media content. Finally, Colicev, Kumar, and O'Connor (2019) observed that FGC vividness has a strong impact on purchase intention.

However, FGC tends to vary in terms of not only the *type* of information provided (e.g., assertiveness, arousal, expressiveness, directiveness, brand personality), but also the *amount*. In posting about a sofa, for example, a brand can promote one hedonic characteristic (e.g., stylish design) or several (e.g., stylish design, coolness, or comfort level). Conversely, a firm can also provide one (e.g., price) or more (e.g., price, functionality, colors) utilitarian arguments. Broadly speaking, prior work on argument numerosity has shown that adding more arguments to a product leads to a more favorable evaluation, even when the arguments themselves are perceived as meaningless (Mukherjee and Hoyer 2001). But while there is enough evidence suggesting that more arguments lead to more favorable evaluation, little is known about the way increasing the number of arguments shapes FGC effectiveness across different types of products.

In this research, we investigate the impact of a so-far untested FGC characteristic—namely, the number of arguments—and how it can be used to boost engagement with FGC and purchase intention. Research on the Elaboration Likelihood Model of persuasion has examined the effect of argument numerosity, suggesting that an increase in the latter can bolster message persuasiveness through both the central and peripheral routes to persuasion (Petty and Cacioppo 1984). Under the central route, consumers scrutinize information carefully; thus, "increasing the number of arguments affects persuasion by enhancing issue-relevant cognitive activity" (Petty and Cacioppo 1984, p. 70). Under the peripheral route, by contrast, consumers do not carefully process the information (due to insufficient motivation or ability); thus, increasing the number of arguments affects persuasion "because of the simple perception that there are a lot of arguments to support it" (Petty and Cacioppo 1984, p. 70).

Although higher argument numerosity is generally meant to enhance persuasion (e.g., Petty and Cacioppo 1984)—and therefore boost positive intentions and behaviors—we reason that its effectiveness might vary based on the adopted processing strategies. Previous research suggests that people employ different strategies when evaluating different product types, such as utilitarian and hedonic products and that the use of these strategies might be affected by peripheral cues such as time cues (Chou 2019), selling cues (Das, Mukherjee, and Smith 2018), promotional cues (Garrido-Morgado et al. 2021), and the dispersion of reviews (Chu, Roh, and Park 2015). For example, Garrido-Morgado et al. (2021) found that island (vs. shelf) displays are more effective in increasing the sales for hedonic (vs. utilitarian) products and that the congruency between the display and promotions is likely to drive these effects. Furthermore, Chu, Roh, and Park (2015) demonstrated that, compared with lowly dispersed ratings, highly dispersed ratings improve the evaluation of hedonic products. Finally, Mu et al. (2022) reported that message quality and message goal have a positive effect on product performance for hedonic (vs. utilitarian) products. The study further demonstrates that message complexity negatively moderates the effects of hedonic and utilitarian appeals on product performance with a stronger negative moderating effect for hedonic appeals.

We believe that the previously overlooked number of arguments is another important peripheral cue that might shape consumer responses to hedonic products. Specifically, being generally experiential and emotional in nature, that is goods whose consumption satisfies more pleasure-related goals (Roggeveen et al. 2015), hedonic products are typically evaluated based on peripheral cues (Voss, Spangenberg, and Grohmann 2003). In other words, when evaluating a hedonic product, people tend to use more affective processing and are less prone to scrutinizing the arguments (Pozharliev, Rossi, and De Angelis 2022). Instead, they rely on other cues such as visual information (e.g., images or testimonials), past experiences, or the emotional aspects related to that hedonic product. Consequently, we do not expect that increasing the number of arguments for hedonic products will affect social media users' behavioral responses, such as engagement with FGC and purchase intention.

In contrast, being typically instrumental and practical, that is existing to fulfill functionality-related goals (Roggeveen et al. 2015), utilitarian products are typically evaluated based on central cues (Voss, Spangenberg, and Grohmann 2003). Because such products serve necessity rather than recreation consumers approach them in a highly cognitive, task-related way (Dhar and Wertenbroch 2000). Consequently, we argue, increasing the number of arguments about utilitarian products is likely to increase FGC persuasiveness, even in contexts (such as social media) where people do not typically engage in deep information processing—simply because such products elicit the inference that more arguments are better than fewer (Petty and Cacioppo 1984). In short, we expect that increasing the number of arguments for utilitarian products will enhance engagement with FGC and purchase intention.

In summary, we predict that the effect of argument numerosity on FGC effectiveness (e.g., engagement and purchase intention) will be moderated by product type (see Figure 1). We hypothesize the following:

Hypothesis 1. *Increasing the argument numerosity in a firm's social media FGC (regardless of whether argument content is utilitarian or hedonic) leads to an increase in online engagement and purchase intention for utilitarian, but not for hedonic, products.*

2.2 | The Underlying Role of Psychological Risk

Decision field theory holds that perceived risk is an important consideration in decision-making (Conchar 2004). Prior research suggests that perceived risk is a major obstacle in online shopping (Hassan et al. 2006). Consumers often perceive a higher level of risk when buying online versus in physical stores, due to the greater difficulty of obtaining and assessing relevant product information (Kamalul Ariffin, Mohan, and Goh 2018). We define this perceived risk as *psychological risk*: consumers' uncertainty, discomfort, and tension in response to online shopping (Hassan et al. 2006). This risk often occurs due to the inference of uncontrollable factors, such as the quality or quantity of information provided (Fan, Shao, and Dong 2022). For example, insufficient product information may lead to an experience of discomfort and tension (Hassan et al. 2006). Those feelings may have a negative impact on typical online behavior, such as online engagement and the intention to buy products via online platforms (Qiao and Wei 2021). Obviously, it behooves firms to minimize this risk, which raises the question: Could using more (vs. fewer) arguments in FGC reduce the perceived psychological risk associated with online behavior?

Previous research suggests that, when faced with a difficult choice, people may utilize more product arguments to justify their decision (Shafir 1993). They might also use argument numerosity as a heuristic ("the more, the better") to reduce their feeling of uncertainty. Therefore, we predict that the number of arguments in FGC can reduce psychological risk, thereby increasing users' engagement with FGC and purchase intention—but only for products that trigger more cognitive processing, for which more arguments will appear reassuring. To elaborate, consider the process that typically characterizes the purchase of a utilitarian product (e.g., an office chair). A person trying to buy a chair online might initially feel psychological risk due to their inability to physically assess the product's tangible characteristics. In this case, the person would prefer to find expert advice, or at least more product information, to determine whether the chair is functional, reliable, durable, or a good value. Since online platforms do not typically provide such customer support, crafting FGC with a higher number of arguments may at least partly offset these feelings of uncertainty and tension associated with evaluating or purchasing the utilitarian product.

By contrast, we predict that the number of arguments will be less relevant to perceived psychological risk for products that are highly emotional in nature, which people are more likely to evaluate based on their affective reactions. For example, when deciding to purchase a hedonic product (e.g., a luxury bag) online, people are less likely to engage in a thorough processing of all product information, including the number of arguments provided in the FGC. Due to the more experiential nature of hedonic products, people will instead rely on cues such as visual information (e.g., images or testimonials), past experiences, or the emotional aspects related to that hedonic product. In short, crafting FGC with a higher number of arguments for such products is unlikely to affect psychological risk.

Other possible risks to consider in the online context include the financial risk, security risk, time risk, and social risk. Financial risk is defined as the probability of an Internet shopper suffering monetary loss from a purchase when the product is not worth the price paid (Featherman and Pavlou 2003). We do not study the product price or refer to it in our promotional messages, therefore we do not expect any effects of number of arguments on financial risk. Security risk

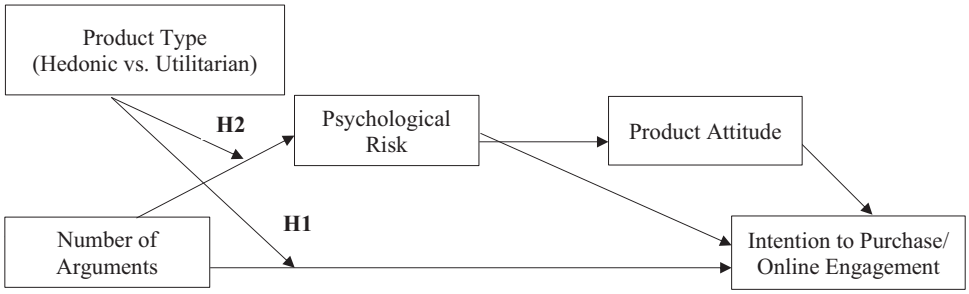

FIGURE 1 | Full conceptual model.

refers to the disclosure of financial information such as credit card number, account number and safe pin number (Kayworth and Whitten 2010). We do not study the level of security or refer to it. Further, we do not manipulate the disclosure of financial information such as credit cards or account number or refer to it in our stimuli, therefore we do not expect any effects of number of arguments on security risk.

Time risk comprises the troublesome experience through online transactions that are often caused by the struggle of navigation and/or submitting the orders and delays of getting the products (Forsythe et al. 2006). We do not study the level of navigation or browsing easiness, nor the effect of providing information about return and transaction policies, therefore we do not expect any effects of number of arguments on time risk. Social risk refers to the perceived judgment on the product purchased that creates dissatisfaction among family, friends or communities (Dowling and Staelin 1994). We do not provide any information regarding the social image or the status of the product, nor information about the potential loss of reputation in consumers' social groups due to inappropriateness of the product or unsuitability of the product, therefore we do not expect any effects of number of arguments on social risk.

Finally, prior research suggests that high levels of perceived psychological risk can be a primary obstacle of behavioral intentions (Conchar 2004). Specifically, scholars suggest that higher levels of uncertainty and tension (resulting from the online environment) may boost the psychological state of risk, and thereby inhibit consumers' tendency to engage with online content (Qiao and Wei 2021) or purchase a product through online platforms (Kamalul Ariffin, Mohan, and Goh 2018; Farivar, Turel, and Yuan 2017). In summary, we hypothesize the following:

Hypothesis 2. *Increasing the argument numerosity in a firm's social media FGC will lead to a decrease in psychological risk, which will then lead to an increase in online engagement with FGC and purchase intention for utilitarian, but not for hedonic, products.*

Figure 1 offers a graphical representation of our full theoretical model and the hypotheses.

3 | The Current Research

We suggest that argument numerosity will increase engagement and purchase intention for utilitarian, but not for hedonic, products. Further, we postulate that this effect is driven by psychological risk. We tested these possibilities in a multimethod investigation that encompasses a field study and several controlled experiments. Study 1 provides initial field evidence for the proposed effect (see Hypothesis 1), showing that increasing the argument numerosity in a firm's social media posts leads to an increase in online engagement for utilitarian, but not for hedonic, products. Next, we used a series of experimental studies to demonstrate the causal impact of argument numerosity for both product types, as well as test the process underlying its effects. Specifically, Study 2 examines whether argument numerosity increases engagement and purchase intention for utilitarian, but not for hedonic, products. Studies 3 and 4 investigate the hypothesized underlying role of psychological risk (see Hypothesis 2). Study 3 tests the process (by changing the test product in Study 3A and by changing the advertising content used to promote the same product in Study 3B) through mediation, examining whether increasing the number of arguments increases purchase intention for utilitarian products because it reduces the psychological risk consumers feel when buying online. Study 4, meanwhile, tests the process through moderation: If the effects of argument numerosity for utilitarian products are driven by psychological risk, as we suggest, then they should be mitigated when the firm offers service support to online shoppers.

4 | Study 1: Number of Arguments in the Field

To provide preliminary evidence of the relationship between the number of arguments, product type, and online engagement, thus testing Hypothesis 1, Study 1 turned to the field. We used automated text analysis to measure the number of arguments across more than 7000 firm-generated posts on Twitter. We examined whether, consistent with our theorizing, higher numbers of arguments increase engagement for utilitarian products, but yield no impact for hedonic products.

4.1 | Data

The data set included 9423 brand-generated tweets published between January 2020 and March 2022. Following Villarroel Ordenes et al. (2019), we focused on consumer brands, whose communication, goals, channels, appeals, and measures of success differ from those messages targeting business clients. We selected eight brands listed on the 2021 Fortune 500 across different industries, and with a relevant presence on social media (e.g., with at least 250,000 followers and posting content on a daily basis) as detected by SocialBaker.com. Our final selection includes the following brands: Canon, Dior, Ford, L'Oréal Paris, Nestlé, Pepsi, Samsung, and Walmart. By investigating industry leaders and top brands representing a variety of sectors, we also ensure that we evaluated a social media strategy that is broadly accepted by consumers. Table 2 contains the descriptive statistics related to the brands we studied. We scraped data directly from twitter.com through its public Application Programming Interface (API). Given that our interest is in tweets that aim to promote products and services, we excluded retweets and replies from the scraping process, resulting in a final sample of 7178 tweets. For every tweet in our data set, we collected the number of likes and retweets it received, along with the timestamp of publication. Moreover, we know the number of users who follow the Twitter brand account and the total number of tweets posted. The descriptive statistics and correlations related to the sample are listed in Supporting Information: Web Appendix A.

TABLE 2 | Sample description.

Brand	Industry	Total tweets	Likes (avg per tweet)	Retweets (avg per tweet)
Canon	Computers	998	38,776 (38.5)	4502 (4.5)
Dior	Apparel	2361	2,670,608 (1,131)	856,367 (362.7)
Ford	Automobiles	232	164,892 (710.7)	23,352 (100.6)
L'Oreal Paris	Soaps and Cosmetics	967	47,647 (49.3)	8278 (8.56)
Nestlè	Consumer Food Products	941	57,618 (61.2)	8410 (8.9)
Pepsi	Consumer Food Products	233	188,659 (809.7)	44,415 (190.6)
Samsung	Electronics	1398	30,905,455 (22,106)	9,698,464 (6,937)
Walmart	Retail	48	7074 (147.4)	945 (19.7)

4.2 | Method

Following prior research (Li and Xie 2020), we measured engagement as the total number of likes and retweets that a post received. Likes and retweets correlate extremely closely ($r = 0.98$), justifying their use as a composite variable (note that treating likes and retweets as separate outcomes produced the same results; see robustness section below).

We used natural language processing to measure the number of arguments at the post level. Following prior research (Srivastava and Kalro 2019), we operationalized number of arguments as the degree of text comprehensiveness within the post (i.e., the degree of information completeness and sufficiency).[1] To do that, we used Latent Dirichlet Allocation (LDA) topic modeling to extract the number of arguments included in tweets. The LDA approach considers each document (i.e., tweet) as a random mixture of various topics, while topics are considered a random combination of words from a lexicon. The LDA model estimates the probability of each topic within a document and the probability of each word within a topic. Both probability distributions are assumed Multinomial with Dirichlet priors. The Multinomial probability distribution assumes that each word in a document has an associated probability that does not depend on previous words, that the same word can appear several times in a document, and that the probabilities of the different words sum up to unity. In our case, the idea was to find clusters of words that signify a common relevant topic. So, we first preprocessed the text. This involved tokenization (i.e., tokenizing the text into individual words, removal of stop words (i.e., common words like "and," "the," "is" that do not add semantic meaning), and stemming techniques (i.e., reducing words to their base or root form, such as "running" to "run"). Then, we configured the LDA model to identify clusters of words that co-occur frequently and signify a common topic. The number of topics extracted from the text was determined using coherence scores to identify the optimal model fit.[2] In particular, following prior work (Stevens et al. 2012), we ran the LDA with different number of topics (i.e., from 1 to 5), computed the coherence score for each iteration, and selected the number of topics with the highest coherence score (i.e., 3). Canon's tweets, for example, often clustered around app integrations and lenses (e.g., "Capture sharper shots with the RF 70-200 mm lens") while Walmart's tweets focused on delivery and purchasing modalities (e.g., "Same-day delivery is here – get your essentials fast"). The list of topics is provided in Supporting Information: Web Appendix A, Table A2. Finally, we computed the argument count (ranging from 0 to 3) by extracting the number of topics (i.e., arguments) discussed at the tweet level. Ancillary analyses further demonstrated that this measure is strongly correlated with human perceptions. Three coders (blind to the hypotheses) rated a random sample of 100 posts in terms of the number of arguments included ($\kappa = 0.78$). The automated measure was strongly related to human perceptions ($r = 0.69$), confirming its validity.

Our second focal variable is the product type. Specifically, we are interested in whether a product falls in either the "utilitarian" class or the "hedonic" one. We used a dummy variable (1 if utilitarian; 0 if hedonic) to account for such a variable. To do that, we collected rating data from two research assistants (blind to the hypotheses; $r = 0.78$) who were asked to classify the product discussed in the post as utilitarian or hedonic. Any disagreements were resolved by the authors. The final annotated sample includes 2958 tweets discussing utilitarian products and 4220 tweets discussing hedonic products.

We also accounted for a number of variables to test alternative explanations, including aspects of the brand, message, and other factors.

4.2.1 | Aspects of the Brand

Rather than being driven by the number of arguments, one could argue that the results are somehow driven by the brand posting the content. First, if a brand account has more followers, more people may see their posts, which should lead to more likes and retweets. Thus, we controlled for this aspect. Second, when brands post more frequently, followers may infer the information is fresh and up to date, which may increase engagement. Consequently, we controlled for the total number of tweets posted. Third, and more generally, some brands might be better or worse at garnering engagement. Thus, we used fixed effects to address unobserved brand heterogeneity that might arise due to different brands' ability and expertise.

4.2.2 | Aspects of the Text

Beyond the brand itself, we also controlled for aspects of the message. First, some advertised posts offer incentives (e.g., free

gifts or discount codes) to followers who leave a comment and tag other people. Given that this might increase engagement, we counted any post as sales-promotional (dummy coded) if it included at least one of Jalali and Papatla (2019) promotional words (i.e., chance, commercial, free, gift, giveaway, promo, win, and sale). Second, brands often ask questions to prompt dialogues with followers, which can increase engagement (De Vries, Gensler, and Leeflang 2012), so we controlled for the number of questions within the message. Third, given that hashtags can boost the number of people who see a post, and thus engagement, we controlled for the number of hashtags. Fourth, some posts mention more brands than others, which could help or hurt engagement (Villarroel Ordenes et al. 2019), so we controlled for the number of brand mentions. Fifth, the number of emojis may increase playfulness and thereby impact engagement (McShane et al. 2021), so we controlled for the number of emojis. Sixth, we controlled for whether posts provided a direct URL to the brand's website, as that can affect engagement (Villarroel Ordenes et al. 2019). Seventh, longer posts may convey more information, which could impact engagement, so we controlled for the length of the post (in words). Eighth, message positivity can increase engagement (Berger and Milkman 2012), so we controlled for valence using the difference between Linguistic Inquiry and Word Count's (LIWC; Pennebaker et al. 2015) dictionary "posemo" (proportion of positive words) and "negemo" (proportion of negative words). Ninth, arousal can increase engagement (Berger and Milkman 2012), so we controlled for this using the VAD (Valence, Arousal, Dominance) lexicon developed by Mohammad (2018). Tenth, easy-to-read posts might be easier to process, and thus trigger higher engagement, so we controlled for text complexity using Flesch–Kincaid (Berger et al. 2020). Eleventh, more concrete language can increase engagement by signaling direct experience (Packard and Berger 2021), so we controlled for linguistic concreteness using Paetzold and Specia (2016) ratings. Twelfth, familiar words are easier to process and can thus boost engagement (Pancer et al. 2019), so we controlled for this factor using Paetzold and Specia (2016) familiarity scores. Thirteenth, greater linguistic extremity can increase engagement by making tweets seem more helpful, so we controlled for extremity using the Rocklage, Rucker and Nordgren (2018) Evaluative Lexicon 2.0. Finally, we controlled for LIWC words by capturing major social or psychological constructs (i.e., social, cognition, perception, and conversation).

4.2.3 | Additional Controls

We accounted for potential carryover effects, such that the number of likes and retweets of a previous brand's tweets might influence the visibility of the next tweet, by including the lagged dependent variable (i.e., engagement_{t-1}) in the predictor set. To control for seasonality, we included the year and month. We also incorporated fixed effects for weekdays and time of the day.

Finally, we examined the relationship between the number of arguments, product type, and engagement. Given that the ranges of the data and extreme values (i.e., engagement ranged from 1 to 536,354) make the use of count distributions less appropriate, we employed an OLS with a log-transformed dependent variable. Given that the different variables do not share similar scales, we standardized all continuous variables (z-scored). Unstandardized results did not differ in sign or significance.

4.3 | Results

As predicted by Hypothesis 1, we observed a main effect of argument count on engagement ($b = 0.027$; SE = 0.013; $t = 2.13$; $p = 0.033$; Table 3, model 1), as qualified by the argument count × utilitarian interaction ($b = 0.090$; SE = 0.025; $t = 3.63$; $p < 0.001$; Table 3, model 2). Consumers engaged more with content when tweets included more arguments to advertise utilitarian products ($b = 0.110$; SE = 0.023; $t = 4.78$; $p < 0.001$; Table 4, column 1), suggesting that a one-standard deviation increase in argument count is associated with an 11% increase in engagement. Conversely, argument count had no impact on engagement for hedonic products ($b = -0.001$; SE = 0.014; $t = -0.50$; $p = 0.618$; Table 4, column 2).

4.3.1 | Robustness

The results also persisted when using negative binomial regression (interaction $b = 0.126$; SE = 0.035; $t = 3.63$; $p < 0.001$; Table A3, column 1), as well as when treating likes ($b = 0.095$; SE = 0.024; $t = 3.88$; $p < 0.001$; Table A3, column 2) and retweets ($b = 0.046$; SE = 0.028; $t = 1.98$; $p = 0.049$; Table A3, column 3) as separate outcomes.

4.4 | Discussion

Study 1 provides preliminary support for our theorizing and in particular for Hypothesis 1. An analysis of more than 7000 firm-generated posts demonstrated that including more arguments increases engagement for utilitarian products, but yields no effect for hedonic ones. Our findings suggest that a one-standard deviation increase in the number of arguments is associated with an 11% increase in engagement for utilitarian products. Overall, therefore, Study 1 offers evidence, from field data, in support of our Hypothesis 1.

5 | Study 2: Manipulating the Number of Arguments

Study 2 has three main goals: First, while the results of Study 1 are consistent with our theorizing and cast doubt on various alternative explanations, one could still question whether the relationship between the number of arguments and engagement is truly causal. In this respect, Study 2 aims to offer converging, causal evidence about the effect predicted by Hypothesis 1, as we manipulated the number of arguments to examine whether argument numerosity increases engagement for utilitarian products, but has no effect for hedonic ones. Second, Study 2 examines the effect of argument numerosity on purchase intention. Third, to rule out that the effects are somehow rooted in the particular social media platform used, we tested our hypotheses on another platform (Instagram).

TABLE 3 | Study 1, results.

DV: ENGAGEMENT		
	(1) Base	**(2) Full**
IV		
Arguments count	0.027* (0.013)	−0.012** (0.014)
Utilitarian (vs. Hedonic)	−0.146** (0.046)	−0.160** (0.047)
Arguments count × Utilitarian		0.090** (0.025)
Controls		
Brand		
# of Followers	0.593** (0.042)	0.581** (0.042)
# of Tweets	−0.182** (0.068)	−0.183** (0.067)
Brand FE	Included	Included
Text		
if Promotional Post	−0.009** (0.034)	−0.006** (0.034)
# of Questions	0.023** (0.015)	0.024** (0.015)
# of Hashtags	0.277** (0.017)	0.280** (0.017)
# of Mentions	0.109** (0.015)	0.112** (0.015)
# of Emojis	0.095** (0.015)	0.096** (0.015)
URL	0.351** (0.093)	0.330** (0.093)
Word Count	−0.130** (0.021)	−0.129** (0.021)
Valence	−0.031** (0.017)	−0.028** (0.017)
Arousal	0.020** (0.016)	0.019** (0.016)
Readability	0.104** (0.018)	0.103** (0.018)
Concreteness	−0.006** (0.014)	−0.006** (0.014)
Familiarity	−0.010** (0.014)	−0.010** (0.014)
Extremity	0.012** (0.012)	0.011** (0.012)
LIWC dictionaries	Included	
Lag Engagement	0.374** (0.017)	0.374** (0.017)
Time FE	Included	Included
N	7170	7170
R^2	0.760	0.760

Note: Robust standard errors are in parentheses. Fixed effects for brand and time (year, month, weekday, and time of the day) are included in the model. We do not report their coefficients, for parsimony.
*$p < 0.05$.; **$p < 0.01$.

TABLE 4 | Study 1 results, utilitarian and hedonic products.

	(1) Utilitarian	**(2) Hedonic**
Arguments count	0.110** (0.023)	−0.001 (0.014)
Controls	Included	Included
N	2954	4216
R^2	0.787	0.843

Note: Robust standard errors are in parentheses. We do not report coefficients for controls, for parsimony.
*$p < 0.05$.; **$p < 0.01$.

5.1 | Method

All participants ($n = 240$) were Instagram users recruited through Prolific. Twelve respondents were excluded because they did not pass the attention check. Thus, the final sample consisted of 228 people (76.7% female; mean age = 35.09 years) who were randomly assigned to a condition in a 2 (number of arguments: high vs. low) × 2 (product type: utilitarian vs. hedonic) between-subjects design.

Everyone was first shown a fictious brand's Instagram post, advertising either eyeglasses (utilitarian product) or sunglasses (hedonic product). The conditions varied on the number of arguments contained in the post (see Supporting Information: Web Appendix B). In the high number of arguments condition, the post read, "Mark the occasion in style with the Block Collection. New design and materials. Available in 4 colors you won't want to miss." In the low condition, the post only contained one sentence: "Mark the occasion in style with the Block Collection" (number of arguments: 3 vs. 1; for a similar approach, see Pozharliev, Rossi, and De Angelis 2022)[3]. To

ensure the effectiveness of the manipulation, we first conducted a pretest that indicated that the number of arguments in the high condition was perceived as higher than that in the low condition ($M_{high} = 4.44$, $SD_{high} = 1.37$ vs. $M_{low} = 3.13$, $SD_{low} = 1.40$, $F(1, 78) = 15.34$, $p < 0.001$). The pretest also confirmed that sunglasses were perceived as more hedonic than eyeglasses ($M_{hedonic} = 4.40$, $SD_{hedonic} = 1.82$ vs. $M_{utilitarian} = 2.95$, $SD_{utilitarian} = 1.78$, $F(1, 78) = 12.94$, $p = 0.001$).[4]

Next, we measured the dependent variables. Participants were asked how likely they would be to engage with the post (i.e., like or comment on it, adapted from Valsesia, Proserpio, and Nunes 2020; 1 = "not at all likely" and 9 = "very likely"). To explore whether the number of arguments also impacts purchase, the survey asked participants how likely they would be to buy the advertised product (three-item scale adapted from Bearden, Lichtenstein, and Teel 1984; "unlikely to likely," "uncertain to certain" and "definitely not to definitely"; $\alpha = 0.88$).

Finally, participants completed the manipulation checks, an attention check (asking whether the picture showed eyeglasses or sunglasses) and basic demographic questions.

5.2 | Results

5.2.1 | Engagement

A 2×2 ANOVA revealed the predicted number of arguments × product type interaction ($F(1, 224) = 6.72$; $p = 0.010$). Consistent with Study 1 and as predicted by Hypothesis 1, a high (vs. low) number of arguments increased engagement for the utilitarian product ($M_{high} = 3.46$, $SD_{high} = 2.28$ vs. $M_{low} = 2.28$, $SD_{low} = 1.74$, $F(1, 224) = 8.56$, $p = 0.004$), but had no impact for the hedonic one ($M_{high} = 2.29$, $SD_{high} = 1.90$ vs. $M_{low} = 2.56$, $SD_{low} = 2.18$, $F(1, 224) = 0.49$, $p = 0.484$; see Figure 2A).

5.2.2 | Purchase Intention

As predicted by Hypothesis 1, we observed a main effect of high number of arguments ($F(1, 226) = 5.78$; $p = 0.017$), as qualified by the number of arguments × product type interaction ($F(1, 224) = 5.59$; $p = 0.019$). A high (vs. low) number of arguments increased purchase intention for the utilitarian product ($M_{high} = 3.75$, $SD_{high} = 2.08$ vs. $M_{low} = 2.53$, $SD_{low} = 1.60$, $F(1, 224) = 11.42$, $p < 0.001$), but not for the hedonic one ($M_{high} = 3.08$, $SD_{high} = 1.69$ vs. $M_{low} = 3.04$, $SD_{low} = 1.87$, $F(1, 224) = 0.01$, $p = 0.922$; see Figure 2B).

5.3 | Discussion

Study 2 provides direct causal evidence that the effects of argument numerosity extend to purchase intention, as well as a different social media platform (i.e., Instagram). First, consistent with Study 1, a high number of arguments made consumers more willing to engage with the post advertising a utilitarian product, but exerted no effect on posts about a hedonic product. Second, higher argument numerosity increased the purchase intention toward the utilitarian (but not hedonic) product. Overall, therefore, Study 2 offers further evidence in support of our Hypothesis 1.

6 | Study 3A: Testing the Process by Varying the Product

Study 3A tested Hypotheses 2 about the underlying process. We suggest that using a high (vs. low) number of arguments increases purchase intention toward utilitarian, but not hedonic, products because it reduces the psychological risk that consumers experience when buying online. In addition, Study 3A tested the generalizability of the results by using different products and a different language.

6.1 | Method

Like before, all participants ($n = 320$) were Instagram users recruited through Prolific. Coincidentally, 12 respondents were again excluded because they did not pass the attention check. Thus, the final sample consisted of 308 people (55.8% female; mean age = 41.01 years) who were randomly assigned to a condition in a 2 (argument number: high vs. low) × 2 (product type: utilitarian vs. hedonic) between-subjects design.

Everyone was first shown a fictious brand's Instagram post, advertising either an office chair (utilitarian) or a handbag (hedonic) (see Supporting Information: Web Appendix B). The conditions varied by the number of arguments contained in the post: In the high number of arguments condition, the post read, "Here's our new handcrafted office chair (or handbag). Designed with attention to detail. Also available in different colors: black, white, and green." In the low number of arguments condition, the post only contained the first sentence: "Here's our new handcrafted office chair (or handbag)" (number of arguments: 3 vs. 1). To ensure the effectiveness of the manipulation, we conducted a pretest that indicated that the number of arguments in the high condition was perceived as higher than the one in the low condition ($M_{high} = 4.12$, $SD_{high} = 1.76$ vs. $M_{low} = 2.57$, $SD_{low} = 1.78$, $F(1, 226) = 16.87$, $p < 0.001$). The pretest also confirmed that the handbag was perceived as more hedonic than the office chair ($M_{hedonic} = 3.78$, $SD_{hedonic} = 1.70$ vs. $M_{utilitarian} = 2.01$, $SD_{utilitarian} = 1.36$, $F(1, 78) = 26.57$, $p < 0.001$).

Next, we collected the process measure. Participants rated the degree to which they experienced a psychological risk in buying online using a two-item scale from prior research (i.e., Hassan et al. 2006; "Shopping this product online makes me feel uncomfortable" and "Shopping this product online causes me to experience unnecessary tension," 1 = "Strongly disagree," 7 = "Strongly agree," $r = 0.88$). The dependent variable (i.e., purchase intention) was the same as in Study 2.

Finally, participants completed the manipulation checks, some ancillary measures to test alternative explanations (see

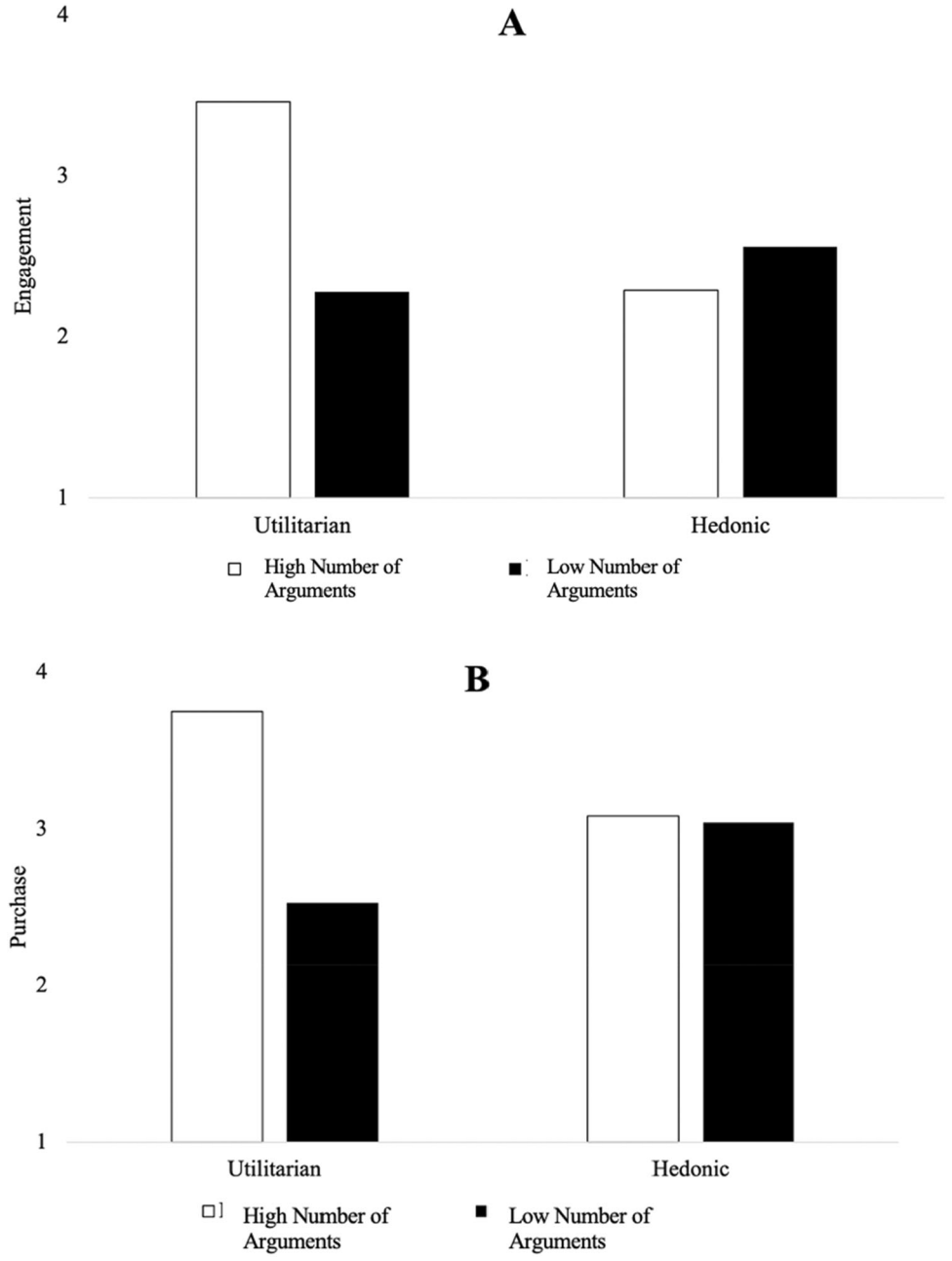

FIGURE 2 | The effects of number of arguments by product type on engagement (A) and purchase ntention (B).

below), an attention check (asking the color of the product: black, blue, or white), and basic demographic questions.

6.2 | Results

6.2.1 | Purchase Intention

As predicted by Hypothesis 1, we observed a main effect for a high number of arguments ($F(1, 306) = 4.27$; $p = 0.040$), as qualified by the number of arguments × product type interaction ($F(1, 304) = 5.16$; $p = 0.024$). Consistent with Study 2, a high (vs. low) number of arguments increased purchase intention for the utilitarian product ($M_{high} = 3.55$, $SD_{high} = 1.87$ vs. $M_{low} = 2.71$, $SD_{low} = 1.51$, $F(1, 304) = 4.80$, $p = 0.009$), but had no impact for the hedonic one ($M_{high} = 2.70$, $SD_{high} = 1.67$ vs. $M_{low} = 2.73$, $SD_{low} = 1.63$, $F(1, 304) = 0.01$, $p = 0.916$).

6.2.2 | Psychological Risk

As predicted by Hypothesis 2, a 2 × 2 ANOVA revealed the predicted number of arguments × product type interaction ($F(1, 304) = 6.97$; $p = 0.009$). A high (vs. low) number of arguments decreased psychological risk for the utilitarian product ($M_{high} = 1.73$, $SD_{high} = 0.86$ vs. $M_{low} = 2.20$, $SD_{low} = 1.28$, $F(1, 304) = 5.59$, $p = 0.020$), but not for the hedonic one ($M_{high} = 2.49$, $SD_{high} = 1.45$ vs. $M_{low} = 2.21$, $SD_{low} = 1.31$, $F(1, 304) = 1.93$, $p = 0.166$).

6.2.3 | Moderated Mediation

A moderated mediation analysis (PROCESS model 7; Hayes 2017)—incorporating product type as a moderator of argument numerosity's effects on psychological risk—found significant moderated mediation on purchase intention ($b = -0.25$, 95% CI = –0.48, –0.06). In the utilitarian condition, the effect of argument numerosity on purchase intention was driven by psychological risk ($b = 0.15$, 95% CI = 0.04, 0.30). A high number of arguments reduced consumers' psychological risk ($b = -0.47$, SE = 0.20, $t = -2.34$, $p = 0.020$), thus increasing purchase intention ($b = 0.33$, SE = 0.07, $t = 4.43$, $p < 0.001$). In the hedonic condition, however, using a high number of arguments no longer impacted psychological risk ($b = 0.28$, SE = 0.20, $t = 1.39$, $p = 0.166$), while the mediation on purchase intention was no longer significant ($b = -0.10$, 95% CI = –0.26, 0.05).

6.3 | Discussion

Study 3A further demonstrates the effects of argument numerosity and their underlying mechanism. First, as predicted, a high number of arguments increased purchase intention. Consumers were more likely to buy the utilitarian product when the post used a high number of arguments, but this effect did not occur for the hedonic product. Second, consistent with Hypothesis 2, these effects were driven by psychological risk. Using a high (vs. low) number of arguments reduced consumers' psychological risk, thus increasing purchase intention for utilitarian (but not hedonic) products.

6.3.1 | Alternative Explanations

We included ancillary measures to cast further doubt on some alternative explanations. First, we considered that respondents perceived the language in the high (vs. low) number of arguments condition as somehow more utilitarian (i.e., a stronger match between language and product type could drive the effects). To test this possibility, we asked participants to rate the language (1 = *hedonic*, 7 = *utilitarian*). Casting the doubt on this alternative, however, the respondents did not perceive the language in the high (vs. low) number of arguments condition as more utilitarian ($F(1, 306) = 0.80$, $p = 0.372$).

Second, we considered that respondents' lack of prior experience with the product could introduce performance risk, that is, ultimately driving the effects of argument numerosity. To test this possibility, we adapted Hassler and Wolters (2006) three-item measure of performance risk ("It is difficult to ascertain the characteristics of the product such as quality, size, color, and style by just looking at the Instagram post," "It is difficult to feel, try or/and experience the product prior to purchase during online shopping" and "I am concerned that the product delivered may not be exactly as it appeared when displayed on the Instagram post"; $\alpha = 0.74$). However, we found that performance risk did not mediate the effect of argument numerosity on purchase for either the utilitarian ($b = 0.09$, 95% CI = –0.01, 0.24) or hedonic ($b = -0.06$, 95% CI = –0.20, 0.06) product. Intuitively, one can expect that consumers' concerns about performance risk should be mitigated by the possibility of obtaining a refund or returning the product.

7 | Study 3B: Testing the Process by Varying the Promotional Content

Study 3B seeks to replicate the results of Study 3A while testing their generalizability. To that end, Study 3B uses the same image of the same product (e.g., chair), but manipulates the product type by using utilitarian (vs. hedonic) language to describe it. Additionally, this study aims to show that argument numerosity (regardless of whether argument content is utilitarian or hedonic) increases consumers' behavioral intentions for utilitarian products more than for hedonic ones. Therefore, instead of using the same arguments across both types of products (Studies 2 and 3A), the arguments used to describe the respective products were uniformly hedonic (e.g., "improves your lifestyle," "delights your senses," "beautiful, stylish") or utilitarian (e.g., "improves your posture," "designed to maximize efficiency," "adjustable arm height"; see Supporting Information: Web Appendix B). Like before, we suggest that using high (vs. low) number of arguments increases engagement and intention to buy utilitarian, but not hedonic, products because it reduces the psychological risk consumers experience in buying online, which in turn increases their attitude toward the product.

7.1 | Method

All participants ($n = 224$; 62.5% female; mean age = 224) were Instagram users recruited through Prolific. They were randomly assigned to a condition in a 2 (number arguments: high vs. low) × 2 (promotional content: utilitarian vs. hedonic) between-subjects design.

Everyone was first shown a fictious brand's Instagram post, advertising a chair framed as either a utilitarian or hedonic product. Specifically, we maintained the same product (e.g., chair) and accompanying picture across conditions, but manipulated the promotional content by describing the product as either hedonic ("Take some time to read this post about a chair, i.e., very cool and enjoyable. It will allow you to enjoy the pleasure of relaxing in style") or utilitarian ("Take some time to read this post about a chair, i.e., very comfortable and functional. It will allow you to perform your daily tasks extremely well"). The conditions also varied in terms of the number of arguments contained in the post (see Supporting Information: Web Appendix B). Next, we collected the different variables measures. Participants rated the degree to which they experienced psychological risk using the same measures as in Study 3A ($r = 0.82$). They also rated their attitude toward the product ("how much would you like/enjoy the product?," 1 = "Not at all," 7 = "Very much"). The measures for purchase intention ($\alpha = 0.93$) and engagement were the same as in Study 2.

Finally, participants completed the manipulation checks and demographic questions.

7.2 | Results

7.2.1 | Manipulation Checks

As expected, the number of arguments in the high condition was perceived as higher than the one in the low condition ($M_{high} = 4.47$, $SD_{high} = 1.64$ vs. $M_{low} = 2.46$, $SD_{low} = 1.49$, $F(1, 222) = 91.59$, $p < 0.001$). Likewise, the chair with hedonic appeal was perceived as more hedonic than the one with utilitarian appeal ($M_{hedonic} = 3.40$, $SD_{hedonic} = 1.91$ vs. $M_{utilitarian} = 2.49$, $SD_{utilitarian} = 1.42$, $F(1, 222) = 16.34$, $p < 0.001$).

7.2.2 | Psychological Risk

As predicted by Hypothesis 2, a 2×2 ANOVA revealed the predicted number of arguments × product type interaction ($F(1, 220) = 4.16$; $p = 0.001$). Specifically, a high (vs. low) number of arguments decreased psychological risk for the utilitarian product ($M_{high} = 1.90$, $SD_{high} = 1.21$ vs. $M_{low} = 2.82$, $SD_{low} = 1.86$, $F(1, 220) = 9.60$, $p = 0.002$), while it had no impact for the hedonic one ($M_{high} = 2.79$, $SD_{high} = 1.71$ vs. $M_{low} = 2.32$, $SD_{low} = 1.56$, $F(1, 220) = 2.35$, $p = 0.129$).

7.2.3 | Serial Moderated Mediation

A serial moderated mediation analysis (PROCESS model 83; Hayes 2017)—incorporating promotional content as a moderator of the effects of argument numerosity on psychological risk and product attitude—found a significant moderated mediation on both purchase intention ($b = -0.10$, 95% CI = −0.23, −0.02) and engagement ($b = -0.09$, 95% CI = −0.22, −0.02). In the utilitarian condition, the effect of argument numerosity was sequentially driven by psychological risk and attitude (purchase: $b = 0.06$, 95% CI = 0.01, 0.15; engagement: $b = 0.06$, 95% CI = 0.01, 0.15): a high argument number reduced consumers' psychological risk ($b = -0.92$, SE = 0.30, $t = -3.03$, $p = 0.003$), which increased the attitude toward the product ($b = 0.23$, SE = 0.06, $t = 3.61$, $p < 0.001$), which increased both purchase intention ($b = 0.30$, SE = 0.08, $t = 3.81$, $p < 0.001$) and engagement ($b = 0.28$, SE = 0.08, $t = 3.42$, $p < 0.001$). In the hedonic condition, however, using a high argument number no longer impacted psychological risk ($b = 0.47$, SE = 0.30, $t = 1.56$, $p = 0.120$) and the mediation was no longer significant (purchase: $b = -0.03$, 95% CI = −0.10, 0.01; engagement: $b = -0.03$, 95% CI = −0.10, 0.01).

7.3 | Discussion

Study 3B further demonstrates the effects of argument numerosity and their underlying mechanism. First, as predicted, consumers experienced less psychological risk with the utilitarian product when the post used a high number of arguments, but the same did not occur for the hedonic product. Therefore, this study offers converging evidence in support of Hypothesis 2.

Second, consistent with our theorizing, a decrease in psychological risk for a high (vs. low) number of arguments for utilitarian (but not hedonic) products was associated with an increase in product attitude, which in turn increased engagement and purchase intention.

Finally, the results of study 3B establish that the observed effects of argument numerosity on psychological risk, product attitude, engagement and purchase intention persist even when: 1) we use the same product and manipulate the way the product is promoted; and 2) we match the utilitarian (vs. hedonic) product with utilitarian (vs. hedonic) arguments.

8 | Study 4: Process by Moderation

Study 4 further tested the hypothesized process (see Hypothesis 2) through both mediation and moderation. If a high number of arguments increases purchase intention for utilitarian products by reducing consumers' psychological risk, then the effect should be mitigated in the presence of customer support cues. To test this possibility, we not only manipulated the number of arguments, but for half the participants, we added new content suggesting that the brand offers support to online shoppers. Given that our prior studies demonstrated a null effect of argument numerosity for hedonic products, we restricted our analysis to utilitarian products only.

8.1 | Method

Like before, all participants ($n = 260$) were Instagram users recruited through Prolific. Sixteen respondents were excluded because they did not pass the attention check. Thus, the final sample consisted of 244 people (68.8% female; mean age = 38.62 years) who were randomly assigned to a condition in a 2 (number of arguments: high vs. low) × 2 (support: baseline [no support] vs. support) between-subjects design.

The baseline condition was the same as in Study 3A, while the support condition added a sentence at the end of the post indicating that the brand offers help to consumers (i.e., "For more info, help, or advice, just contact us from our account page").

The dependent variable and process measures were the same as in Study 3A. Participants then completed the manipulation checks, the tests of alternative explanations (see below), the attention check used in Study 3A, and demographic questions.

8.2 | Results

8.2.1 | Purchase Intention

As predicted by Hypothesis 1, we observed a main effect for both the high number of arguments ($F(1, 242) = 4.93$, $p = 0.027$) and support ($F(1, 242) = 5.55$, $p = 0.019$), as qualified by the predicted number of arguments × support interaction ($F(1, 240) = 4.16$, $p = 0.042$). Consistent with our prior experiments, a high number of arguments increased purchase intention in the baseline condition ($M_{high} = 2.99$, $SD_{high} = 1.44$ vs. $M_{low} = 2.28$, $SD_{low} = 1.18$, $F(1, 240) = 9.41$, $p = 0.002$). Consistent with the

hypothesized role of psychological risk, this difference disappeared when the brand mentioned that it offered customer support ($M_{high} = 3.06$, $SD_{high} = 1.32$ vs. $M_{low} = 3.03$, $SD_{low} = 1.26$, $F(1, 240) = 0.01$, $p = 0.927$, see Figure 3).

8.2.2 | Psychological Risk

As predicted by Hypothesis 2, a 2×2 ANOVA revealed the predicted number of arguments × support interaction ($F(1, 240) = 4.30$; $p = 0.039$). Consistent with Study 3, a high number of arguments decreased psychological risk in the baseline condition ($M_{high} = 2.09$, $SD_{high} = 1.15$ vs. $M_{low} = 2.65$, $SD_{low} = 1.29$, $F(1, 240) = 7.08$, $p = 0.008$). However, this difference disappeared when the brand mentioned that it offered customer support ($M_{high} = 2.15$, $SD_{high} = 1.35$ vs. $M_{low} = 2.08$, $SD_{low} = 0.97$, $F(1, 240) = 0.12$, $p = 0.734$).

8.2.3 | Moderated Mediation

A moderated serial mediation analysis (PROCESS model 7; Hayes 2017)—incorporating support as a moderator of argument numerosity's effects on psychological risk—found significant moderated mediation on purchase intention ($b = -0.22$, 95% CI = −0.46, −0.01). As in Study 3, the effect of argument numerosity on purchase intention was driven by psychological risk in the baseline condition ($b = 0.19$, 95% CI = 0.04, 0.38). A high number of arguments reduced consumers' psychological risk ($b = -0.56$, SE = 0.21, $t = -2.66$, $p = 0.008$), thus increasing purchase intention ($b = 0.34$, SE = 0.07, $t = 5.04$, $p < 0.001$). When the brand mentioned it offered customer support, however, a high number of arguments no longer impacted psychological risk ($b = 0.08$, SE = 0.22, $t = 0.34$, $p = 0.734$). Further, the mediation on purchase was no longer significant ($b = -0.03$, 95% CI = −0.17, 0.13). Therefore, this study offers converging evidence in support of Hypothesis 2.

8.2.4 | Alternative Explanations

We conducted ancillary analyses (using the same measures as Study 3) to test alternative explanations. Given that we only expected the number of arguments to impact the baseline control condition, we focused our analyses there. The utilitarian argument exerted no effects ($F(1, 127) = 0.29$, $p = 0.593$), while performance risk did not mediate the effect of argument numerosity on purchase intention (indirect effect = 0.06, 95% CI = −0.08, 0.19). Overall, these results cast further doubt on alternative explanations of the effect.

9 | General Discussion

Despite the wide interest in what shapes the effectiveness of FGC, little is known about which content strategies are more effective for different product types. Considering that consumers often experience psychological risk when buying online, companies have reason to find solutions to such tensions. The present research helps to address this gap. Through a combination of field data and controlled experiments, we illustrate how the impact of argument numerosity on engagement and purchase intention varies based on product type (utilitarian vs. hedonic), as well as illuminate the process underlying these effects.

First, we conducted an automated text analysis of more than 7000 social media posts, finding that people engage more with content when firms use a higher number of arguments. However, this effect only applied to utilitarian, and not hedonic, products (Study 1). In Studies 2, 3 and 4, we experimentally

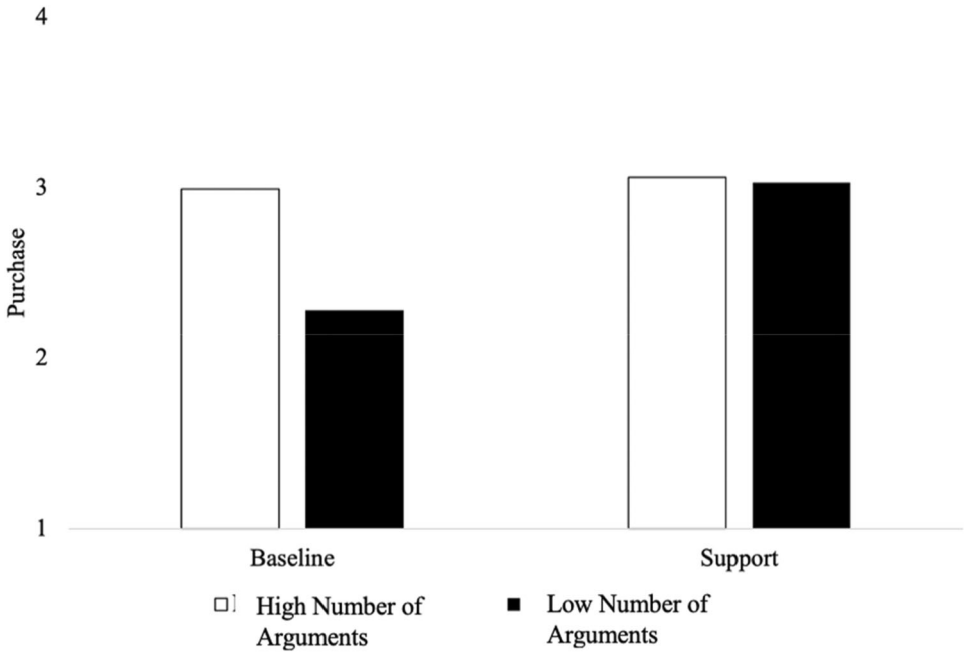

FIGURE 3 | Moderation by support for utilitarian products.

manipulated the number of arguments to provide more direct causal evidence of its impact. We observed that a higher number of arguments boosts peoples' willingness to engage with the content and buy, but only when the advertised product is utilitarian.

Second, using both mediation and moderation, we uncovered the role of psychological risk in driving these effects (Studies 3 and 4). A higher number of arguments increased purchase intention because it reduced peoples' psychological risk (Study 3A), which in turn increased their product attitude (3B). Consistent with this notion, introducing customer support cues mitigated the effect of a high number of arguments on purchase intention for utilitarian products (Study 4).

Third, the studies jointly cast doubt on numerous alternative explanations. The effects persisted in the field data even controlling for aspects of the brand, the text, and other features that might otherwise explain these outcomes. Further, experimental evidence showed that utilitarian arguments and performance risk did not explain the relationship between the number of arguments and purchase intention.

9.1 | Theoretical Implications

Our findings have relevant theoretical implications. First, the present research enriches our knowledge about the effect of FGC characteristics on consumer responses. Scholars in this field have widely investigated the effect of different FGC characteristics (Colicev, Kumar, and O'Connor 2019; De Vries, Gensler, and Leeflang 2012; Lee, Hosanagar, and Nair 2018; Villarroel Ordenes et al. 2019), but have neglected to study the effects related to the number of arguments. Considering the ubiquity of product descriptions, our results have important implications for marketers using FGC to promote their products. Prior research on argument numerosity suggests that increasing the number of arguments simply makes all products more attractive, but does not affect people preferences. Our work suggests otherwise (e.g., Mukherjee and Hoyer 2001), demonstrating that the positive effect of argument numerosity is contingent upon the type of product being promoted with FGC. In doing so, our research also contributes to the literature on people responses to utilitarian and hedonic products (Dhar and Wertenbroch 2000; Roggeveen et al. 2015). Specifically, we show that the number of arguments presented in FGC affects consumer responses in different ways depending on whether the product is utilitarian or hedonic in nature. By establishing that firms' use of more (vs. fewer) arguments for utilitarian products leads to more favorable people responses, we help substantiate the notion that people invest more cognitive resources into processing information about utilitarian (vs. hedonic) products.

Second, our findings have important implications for understanding the role of peripheral cues in evaluation and persuasion more generally. Dual process theories (Chaiken and Trope 1999) have generally assumed that the effect of argument numerosity on attitude change depends on factors that are exogenous to the type of product being promoted. However, we affirm that the type of product shapes this effect. Moreover, past research has never studied whether the impact of argument numerosity on attitude change extends to actual online behavior (e.g., online engagement). Thus, our findings have theoretical significance beyond the traditional domains of consumer attitude or choice, offering interesting directions for future research. Furthermore, previous research on Dual Coding Theory (Paivio 1991) suggests that both verbal (e.g., based on language) and visual (e.g., based on images) cues equally affect consumer responses to online promotional messages. Instead, our findings suggest that the nature of the promoted product moderates how much consumers rely on verbal cues, which in turn shapes their perceptions of and responses to FGC.

Third, our research extends current knowledge about the effect of argument numerosity in social media communication (e.g., Pozharliev, Rossi, and De Angelis 2022). Specifically, we tested its effect on the perceived psychological risk connected with online purchasing and, thereby, on consumers' engagement with FGC and purchase intentions.

9.2 | Practical Implications

Our study also offers important implications for social media managers. First, our findings can help social media marketers better identify FGC characteristics that might have the greatest influence on social media users' responses. In particular, our findings illuminate how to possibly reduce, through FGC, the psychological risk that often characterizes online purchases. Following our results, marketers could adapt their advertising text to the type of product being promoted. Specifically, they should focus on leveraging more arguments when promoting utilitarian products, but follow a different strategy when advertising hedonic products.

Second, our findings suggest that offering support services to online customers is a viable way to offset a low number of arguments. In other words, it seems that companies can emphasize their customer support for online buyers to mitigate the effect of a low number of arguments.

Third, the current findings have important implications for policymaking and consumer welfare. Our results suggest that people may make choices with long-term benefits—for both themselves and society—when given more arguments about said choices. This is especially relevant when people are short on evaluation resources or in situations where they tend to rely more on heuristic cues. For example, health promoters might provide more arguments on healthy (e.g., fruits and vegetables) food products to encourage healthier diet choices. Conversely, they might provide fewer arguments when mentioning unhealthy foods (e.g., French fries and candies) to discourage unhealthy diet choices. The same tactic might apply to encouraging consumers to choose between more sustainable (e.g., insect-based food) products versus less sustainable (e.g., chicken breast) ones. In short, the decision to present more or fewer product arguments should depend on the FGC objectives and the type of product being promoted.

Fourth, findings of our experiments seem particularly interesting in today's society in which people seem to increasingly rely

on visual content to form their judgments about products, brands as well as other types of entities (Farace et al. 2020). While this is true in many cases, our findings demonstrate that, even when accompanied by a picture (as in our fictitious Instagram posts), text might still make the difference in consumers' attitudes and behavioral intentions for utilitarian products. In other words, even on such a social media as Instagram, where image-based content is generally more impactful than text-based content (Li and Xie 2020), there are cases (i.e., utilitarian products) where text is important.

Fifth, while we show that argument numerosity makes the difference, for utilitarian products, we acknowledge that the social media platform could affect how consumers perceive argument numerosity. While Twitter is more text-based, for example, TikTok is more visual-based. Our research offers specific recommendations for platforms like Instagram and Twitter, but it does not provide empirical evidence on the effects of argument numerosity in highly visual social media platforms, such as TikTok. Exploring such platforms would broaden the reach and applicability of our conclusions and practical implications. That said, finding the same results on both Twitter (field study) and Instagram (experiments) speaks to the generalizability of the effects. Further, while it is true that we did not test our proposed effects on TikTok, recent studies on social media effectiveness show that linguistic cues (e.g., sensorial language) embedded both in Instagram posts and TikTok video captions have same effects on consumer perceptions and reactions (Cascio Rizzo et al. 2023). Based on this empirical evidence, we believe that it is possible that argument numerosity affects consumer perceptions and responses on TikTok in the same way it does in less visual social media platforms such as Twitter and Instagram.

Lastly, although we did not manipulate and test consumers' processing of the pictures that accompanied the text in the Instagram posts, our results suggest that social media managers should emphasize the picture over the text when promoting hedonic products. People who are interested in such products may not engage in deep cognitive elaboration of textual information (e.g., argument numerosity). For utilitarian products, by contrast, social media managers should focus on publishing posts that contain a high number of arguments.

9.3 | Limitations and Future Research

Finally, our study features some limitations that might represent fruitful avenues for future work. First, our studies converged in showing that argument numerosity affects peoples' responses for utilitarian products only. However, future work may want to investigate conditions where this factor could impact hedonic products, such as personality traits, the type of hedonic product, or the product's usage context. For example, prior research suggests that cultural variations such as collectivism, indulgence and masculinity are likely to shape user responses to FGC on social media (Chwialkowska and Kontkanen 2017). Furthermore, recent studies found that Western European and Latin cultures are driven by different motivations in their use of social media content which could potentially affect their responses to FGC (Buzeta et al. 2024). Thus, future research could delve deeper into the role of cultural factors in shaping user responses to argument numerosity for both utilitarian and hedonic products. These insights might help companies to further segment their target audience and tailor better their communication strategies.

Second, we focused on the differential effects of product and textual characteristics, such as number of arguments and product type. Moreover, we controlled for a variety of brand, textual and URL features, such as number of followers, number of emojis, and concreteness. However, there are other characteristics of social media content that can be evaluated. Future research could also consider the moderating effect of types of photos or video content posted as FGC. Furthermore, we did not check for possible sectorial variations. While the use of FGC has been found to be very effective for entertainment firms (Cheng et al. 2021) and companies operating in the hospitality industry (Kim, Park, and Kim 2023), more ambiguous results have been reported for private healthcare organizations (Qiao, Huang, and Yan 2024) and technology companies (Lacka et al. 2022). Thus, future research could delve deeper into the role of sectorial factors in shaping user responses to argument numerosity for both utilitarian and hedonic products. These insights might help companies operating in different industries to further segment their target audience and tailor better their communication strategies.

Third, we focused on perceived psychological risk as an underlying mechanism for consumers' reactions to FGC featuring different product types and numbers of arguments. However, there are other potential mechanisms that future research could explore. One such mechanism could be processing fluency, defined as the "ease with which a person perceives and identifies the physical characteristics of a stimulus" (Lee and Labroo 2004, p. 152). It could be that for utilitarian products higher number of arguments might lead to a higher purchase intention compared with low number of arguments due to enhanced processing fluency. Fourth, like the extant FGC research, we collected FGCs from Twitter as they are among the companies with the largest market share on social media. Investigating other platforms, such as Facebook and YouTube, could extend the generalizability of our findings.

Fourth, the absence of key firm marketing data, such as market segmentation, targeting, and positioning strategy, does not allow us to dismiss the influence of firm marketing action on the effect of product types and content characteristics reported here. Examining the boundary conditions employing firms' internal data, such as marketing communication objectives, may be of interest for future research. Furthermore, we did not check if participants had any type of myopia or eye impairment, which could have affected the engagement and intent for purchasing eyeglasses. While we agree this may affect purchase intent in the study with the eyeglasses, it has no impact on the moderation results in the other studies (e.g., office chair and the handbag).

Fifth, longer exposure times on some platforms are likely to enhance engagement with argument-rich content by allowing for deeper processing and better comprehension. That said, finding the same effects across platforms (i.e., Twitter,

Instagram) speaks to the generalizability of the effects. However, it remains to be seen whether the effects are the same on platforms that imply longer exposure time (e.g., TikTok).

Last, while we show that argument numerosity makes the difference, for utilitarian products, also when keeping the product picture constant (i.e., chair; Study 3B), we did not empirically disentangle the effect of pictures versus text in our experiments using fictitious Instagram posts. An unintended consequence of our finding, therefore, could be that images might not be highly relevant when promoting utilitarian products on a social media such as Instagram. However, to tackle this issue it would be necessary investigating how much consumers' perceptions, behavioral intentions and possibly real behaviors are shaped by the image of the utilitarian product vis-à-vis the text. Future work could explore this.

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Ethics Statement

The authors have nothing to report.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Available from the corresponding author on reasonable request.

Endnotes

[1] In their work on online consumer reviews, Srivastava and Kalro (2019) considered three additional variables in operationalizing argument numerosity: namely, relevance, readability and clarity. Relevance (dummy coded) indicates whether the text features at least one of the topics identified via LDA. Since this variable contains the same information of comprehensiveness, we decided to exclude it from our analysis. Readability was included as a control variable in the predictors set. Clarity is computed by capturing the spelling and grammatical errors, as well as writing style issues. We noticed that none of the brand tweets featured such issues. Unlike consumer reviews, finding errors in brand tweets is less likely because brands employ people who specialize in marketing communications on social media. Thus, we excluded clarity from our analysis.

[2] Note, the model assumes two distributions. First, the distribution of topics across tweets is Multinomial, assuming that any given tweet is composed of multiple topics with assigned probabilities. Second, the distribution of words within each topic is also Multinomial, implying that each word in a topic has a specific likelihood of appearing. Both distributions are governed by Dirichlet priors, which help control the diversity of topics within tweets and the diversity of words within topics.

[3] Our stimuli were designed to have similar levels of argument numerosity to the field data in Study 1, in which the number of topics discussed in posts ranged from 0 to 3.

[4] Participants were asked "how hedonic is the product you saw before? Consider that by hedonic we mean a product that provides more experiential consumption, pleasure and excitement (e.g., lipstick). By utilitarian we mean a product that is primarily instrumental and/or functional to some intent (e.g., laptop) 1 = *utilitarian*, 7 = *hedonic*)

References

Alves, H., C. Fernandes, and M. Raposo. 2016. "Social Media Marketing: A Literature Review and Implications." *Psychology & Marketing* 33, no. 12: 1029–1038.

Ashley, C., and T. Tuten. 2015. "Creative Strategies in Social Media Marketing: An Exploratory Study of Branded Social Content and Consumer Engagement." *Psychology & Marketing* 32, no. 1: 15–27.

Ballester, E., C. Ruiz, and N. Rubio. 2021. "Engaging Consumers Through Firm-Generated Content on Instagram." *Spanish Journal of Marketing-ESIC* 25, no. 3: 355–373.

Bearden, W. O., D. R. Lichtenstein, and J. E. Teel. 1984. "Comparison Price, Coupon, and Brand Effects on Consumer Reactions to Retail Newspaper Advertisements." *Journal of Retailing* 60, no. 2: 11–34.

Berger, J., A. Humphreys, S. Ludwig, W. W. Moe, O. Netzer, and D. A. Schweidel. 2020. "Uniting the Tribes: Using Text for Marketing Insight." *Journal of Marketing* 84, no. 1: 1–25.

Berger, J., and K. L. Milkman. 2012. "What Makes Online Content Viral?" *Journal of Marketing Research* 49, no. 2: 192–205.

Buzeta, C., F. De Keyzer, N. Dens, and P. De Pelsmacker. 2024. "Branded Content and Motivations for Social Media Use as Drivers of Brand Outcomes on Social Media: A Cross-Cultural Study." *International Journal of Advertising* 43, no. 4: 637–671.

Calder, B. J., C. A. Insko, and B. Yandell. 1974. "The Relation of Cognitive and Memorial Processes to Persuasion in a Simulated Jury Trial." *Journal of Applied Social Psychology* 4, no. 1: 62–93.

Cascio Rizzo, G. L., J. Berger, M. De Angelis, and R. Pozharliev. 2023. "How Sensory Language Shapes Influencer's Impact." *Journal of Consumer Research* 50, no. 4: 810–825.

Cascio Rizzo, G. L., F. Villarroel Ordenes, R. Pozharliev, M. De Angelis, and M. Costabile. 2024. "How High-Arousal Language Shapes Micro-Versus Macro-Influencers' Impact." *Journal of Marketing* 88, no. 4: 107–128.

Chaiken, S., and Y. Trope. 1999. *Dual Process Theories in Social Psychology*. New York: Guilford Press.

Cheng, M., J. Liu, J. Qi, and F. Wan. 2021. "Differential Effects of Firm Generated Content on Consumer Digital Engagement and Firm Performance: An Outside-In Perspective." *Industrial Marketing Management* 98: 41–58.

Chou, H. Y. 2019. "Units of Time Do Matter: How Countdown Time Units Affect Consumers' Intentions to Participate in Group-Buying Offers." *Electronic Commerce Research and Applications* 35: 100839.

Chu, W., M. Roh, and K. Park. 2015. "The Effect of the Dispersion of Review Ratings on Evaluations of Hedonic Versus Utilitarian Products." *International Journal of Electronic Commerce* 19, no. 2: 95–125.

Chwialkowska, A., and M. Kontkanen. 2017. "How Culture Shapes User Responses to Firm-Generated Content on Social Media: The Role of Cultural Dimensions of In-Group Collectivism, Indulgence, and Masculinity." *International Journal of Export Marketing* 1, no. 4: 328–356.

Colicev, A., A. Kumar, and P. O'Connor. 2019. "Modeling the Relationship between Firm and User Generated Content and the Stages of the Marketing Funnel." *International Journal of Research in Marketing* 36, no. 1: 100–116.

Conchar, M. P., G. M. Zinkhan, C. Peters, and S. Olavarrieta. 2004. "An Integrated Framework for the Conceptualization of Consumers' Perceived-Risk Processing." *Journal of the Academy of Marketing Science* 32, no. 4: 418–436.

Das, G., A. Mukherjee, and R. J. Smith. 2018. "The Perfect Fit: The Moderating Role of Selling Cues on Hedonic and Utilitarian Product Types." *Journal of Retailing* 942: 203–216.

Demeku, A. (2023). What is a UGC? (+ How to become one, accessed October 22, 2024. https://later.com/blog/ugc-creator/.

Dhar, R., and K. Wertenbroch. 2000. "Consumer Choice Between Hedonic and Utilitarian Goods." *Journal of Marketing Research* 37, no. 1: 60–71.

Dowling, G. R., and R. Staelin. 1994. "A Model of Perceived Risk and Intended Risk-Handling Activity." *Journal of Consumer Research* 21, no. 1: 119–134.

Fan, W., B. Shao, and X. Dong. 2022. "Effect of E-Service Quality on Customer Engagement Behavior in Community E-Commerce." *Frontiers in Psychology* 13: 965998.

Farace, S., A. Roggeveen, F. Villarroel Ordenes, K. De Ruyter, M. Wetzels, and D. Grewal. 2020. "Patterns in Motion: How Visual Patterns in Ads Affect Product Evaluations." *Journal of Advertising* 49, no. 1: 3–17.

Farivar, S., O. Turel, and Y. Yuan. 2017. "A Trust-Risk Perspective on Social Commerce Use: An Examination of the Biasing Role of Habit." *Internet Research* 27, no. 3: 586–607.

Featherman, M. S., and P. A. Pavlou. 2003. "Predicting E-Services Adoption: A Perceived Risk Facets Perspective." *International Journal of Human-Computer Studies* 59, no. 4: 451–474.

Forsythe, S., C. Liu, D. Shannon, and L. C. Gardner. 2006. "Development of a Scale to Measure the Perceived Benefits and Risks of Online Shopping." *Journal of Interactive Marketing* 20, no. 2: 55–75.

Garrido-Morgado, Á., O. González-Benito, M. Martos-Partal, and K. Campo. 2021. "Which Products Are More Responsive to In-Store Displays: Utilitarian or Hedonic?" *Journal of Retailing* 97, no. 3: 477–491.

Gomez, R. (2023). The Importance Of Social Media Marketing: 7 Stats That Prove Social's Role in Business Success, accessed October 22, 2024. https://sproutsocial.com/insights/importance-of-social-media-marketing-in-business/.

Hassler, U., and J. Wolters. 2006. "Autoregressive Distributed Lag Models and Cointegration." *Allgemeines Statistisches Archiv* 90: 59–74.

Hassan, A. M., M. B. Kunz, A. W. Pearson, and F. A. Mohamed. 2006. "Conceptualization and Measurement of Perceived Risk in Online Shopping." *Marketing Management Journal* 16, no. 1: 138.

Hayes, A. F. 2017. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. Guilford Publications.

Holmes, J. H., and K. E. Crocker. 1987. "Predispositions and the Comparative Effectiveness of Rational, Emotional and Discrepant Appeals for Both High Involvement and Low Involvement Products." *Journal of the Academy of Marketing Science* 15: 27–35.

Homburg, C., L. Ehm, and M. Artz. 2015. "Measuring and Managing Consumer Sentiment in an Online Community Environment." *Journal of Marketing Research* 52, no. 5: 629–641.

Jalali, N. Y., and P. Papatla. 2019. "Composing Tweets to Increase Retweets." *International Journal of Research in Marketing* 36, no. 4: 647–668.

Kamalul Ariffin, S., T. Mohan, and Y. N. Goh. 2018. "Influence of Consumers' Perceived Risk on Consumers' Online Purchase Intention." *Journal of Research in Interactive Marketing* 12, no. 3: 309–327.

Kayworth, T. R., and D. Whitten. 2010. "Effective Information Security Requires a Balance of Social and Technology Factors." *MIS Quarterly Executive* 9, no. 3: 163.

Kim, W. H., E. Park, and S. B. Kim. 2023. "Understanding the Role of Firm-Generated Content By Hotel Segment: The Case of Twitter." *Current Issues in Tourism* 26, no. 1: 122–136.

Kumar, A., R. Bezawada, R. Rishika, R. Janakiraman, and P. K. Kannan. 2016. "From Social to Sale: The Effects of Firm-Generated Content in Social Media on Customer Behavior." *Journal of Marketing* 80, no. 1: 7–25.

Kwon, J., K. W. Chan, W. Gu, and F. Septianto. 2022. "The Role of Cool Versus Warm Colors in B2B Versus B2C Firm-Generated Content for Boosting Positive eWOM." *Industrial Marketing Management* 104: 212–225.

Lacka, E., D. E. Boyd, G. Ibikunle, and P. K. Kannan. 2022. "Measuring the Real-Time Stock Market Impact of Firm-Generated Content." *Journal of Marketing* 86, no. 5: 58–78.

Lee, A. Y., and A. A. Labroo. 2004. "The Effect of Conceptual and Perceptual Fluency on Brand Evaluation." *Journal of Marketing Research* 41, no. 2: 151–165.

Lee, D., K. Hosanagar, and H. S. Nair. 2018. "Advertising Content and Consumer Engagement on Social Media: Evidence From Facebook." *Management Science* 64, no. 11: 5105–5131.

Li, Y., and Y. Xie. 2020. "Is a Picture Worth a Thousand Words? An Empirical Study of Image Content and Social Media Engagement." *Journal of Marketing Research* 57, no. 1: 1–19.

Lu, S., I. Dinner, and R. Grewal. 2023. "The Ripple Effect of Firm-Generated Content on New Movie Releases." *Journal of Marketing Research* 60, no. 5: 908–931.

McShane, L., E. Pancer, M. Poole, and Q. Deng. 2021. "Emoji, Playfulness, and Brand Engagement on Twitter." *Journal of Interactive Marketing* 53, no. 1: 96–110.

Mohammad, S. 2018. "Obtaining Reliable Human Ratings of Valence, Arousal, and Dominance for 20,000 English Words (Volume 1: Long Papers)." In Proceedings of the 56th Annual Meeting of the Association for Computational Linguistics, (pp.174–184).

Mu, J., J. Zhang, A. Borah, and J. Qi. 2022. "Creative Appeals in Firm-Generated Content and Product Performance." *Information Systems Research* 33, no. 1: 18–42.

Mukherjee, A., and W. D. Hoyer. 2001. "The Effect of Novel Attributes on Product Evaluation." *Journal of Consumer Research* 28: 462–472.

Packard, G., and J. Berger. 2021. "How Concrete Language Shapes Customer Satisfaction." *Journal of Consumer Research* 47, no. 5: 787–806.

Paetzold, Gustavo, and Lucia Specia (2016, June). "Inferring Psycholinguistic Properties of Words." In Proceedings of the 2016 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (pp. 435–440).

Paivio, A. 1991. "Dual Coding Theory: Retrospect and Current Status." *Canadian Journal of Psychology/Revue Canadienne de Psychologie* 45, no. 3: 255–287.

Pancer, E., V. Chandler, M. Poole, and T. J. Noseworthy. 2019. "How Readability Shapes Social Media Engagement." *Journal of Consumer Psychology* 29, no. 2: 262–270.

Pennebaker, J. W., R. L. Boyd, K. Jordan, and K. Blackburn. 2015. *The Development and Psychometric Properties of LIWC2015*.

Petty, R. E., and J. T. Cacioppo. 1984. "The Effects of Involvement on Responses to Argument Quantity and Quality: Central and Peripheral Routes to Persuasion." *Journal of Personality and Social Psychology* 46, no. 1: 69–81.

Pozharliev, R., D. Rossi, and M. De Angelis. 2022. "Consumers' Self-Reported and Brain Responses to Advertising Post on Instagram: The Effect of Number of Followers and Argument Quality." *European Journal of Marketing* 56, no. 3: 922–948.

Qiao, S., and J. Wei. 2021. "Research on the Factors Affecting Customer Engagement in Social Commerce From the Perspective of Two-Factor Theory: Platform Comparison Between E-Commerce and Social Media." *Frontiers in Business Economics and Management* 1, no. 3: 8–13.

Qiao, W., N. Huang, and Z. Yan. 2024. "How to Translate Firm-Generated Content to Sales? Evidence From Online Healthcare Platforms." *Journal of Management Information Systems* 41, no. 4: 1173–1197.

Rocklage, M. D., D. D. Rucker, and L. F. Nordgren. 2018. "The Evaluative Lexicon 2.0: The Measurement of Emotionality, Extremity, and Valence in Language." *Behavior Research Methods* 50, no. 4: 1327–1344.

Roggeveen, A. L., D. Grewal, C. Townsend, and R. Krishnan. 2015. "The Impact of Dynamic Presentation Format on Consumer Preferences for Hedonic Products and Services." *Journal of Marketing* 79, no. 6: 34–49.

Santiago, J., M. T. Borges-Tiago, and F. Tiago. 2022. "Is Firm-Generated Content a Lost Cause?" *Journal of Business Research* 139: 945–953.

Shafir, E., I. Simonson, and A. Tversky. 1993. "Reason-Based Choice." *Cognition* 49, no. 1–2: 11–36.

Shao, A., and H. Li. 2021. "How Do Utilitarian Versus Hedonic Products Influence Choice Preferences: Mediating Effect of Social Comparison." *Psychology & Marketing* 38, no. 8: 1250–1261.

Srivastava, V., and A. D. Kalro. 2019. "Enhancing the Helpfulness of Online Consumer Reviews: The Role of Latent (Content) Factors." *Journal of Interactive Marketing* 48: 33–50.

Stevens, K., P. Kegelmeyer, D. Andrzejewski, and D. Buttler (2012). "Exploring Topic Coherence Over Many Models and Many Topics." In Proceedings of the 2012 Joint Conference on Empirical Methods in Natural Language Processing and Computational Natural Language Learning (pp. 952–961).

Tyrväinen, O., H. Karjaluoto, and D. Ukpabi. 2023. "Understanding the Role of Social Media Content in Brand Loyalty: A Meta-Analysis of User-Generated Content Versus Firm-Generated Content." *Journal of Interactive Marketing* 58, no. 4: 400–413.

Valsesia, F., D. Proserpio, and J. C. Nunes. 2020. "The Positive Effect of Not Following Others on Social Media." *Journal of Marketing Research* 57, no. 6: 1152–1168.

Villarroel Ordenes, F., D. Grewal, S. Ludwig, K. D. Ruyter, D. Mahr, and M. Wetzels. 2019. "Cutting through Content Clutter: How Speech and Image Acts Drive Consumer Sharing of Social Media Brand Messages." *Journal of Consumer Research* 45, no. 5: 988–1012.

Voss, K. E., E. R. Spangenberg, and B. Grohmann. 2003. "Measuring the Hedonic and Utilitarian Dimensions of Consumer Attitude." *Journal of Marketing Research* 40, no. 3: 310–320.

De Vries, L., S. Gensler, and P. S. H. Leeflang. 2012. "Popularity of Brand Posts on Brand Fan Pages: An Investigation of the Effects of Social Media Marketing." *Journal of Interactive Marketing* 26, no. 2: 83–91.

Wang, F., M. Yue, Q. Yuan, and R. Cao. 2024. "Differential Effects of Visual Complexity in Firm-Generated Content on Consumer Engagements: A Deep Learning Approach." *Marketing Intelligence & Planning* 42, no. 4: 684–703.

Wertz, J. (2017) Exceptional Customer Service is the key to E-Commerce Growth. *Forbes*, accessed July 25, 2022. https://www.forbes.com/sites/jiawertz/2017/08/18/exceptional-customer-service-is-key-to-e-commerce-growth/.

Supporting Information

Additional supporting information can be found online in the Supporting Information section.