Experiencing High Loneliness Increases Evaluation of Products in Social Media Ads[☆]

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Abstract

This research investigates how loneliness affects people's preferences for products that appear in social media ads. Four studies examine the impact of loneliness that is both measured in an established scale and situationally induced via a recall task. Individuals who experience higher levels of loneliness evaluate the same products more highly when they are advertised in a social (i.e., Instagram) compared to non-social (i.e., brand website) media platform. This effect occurs because loneliness increases people's attention to others' social evaluation of a product, and social media ads provide this information via social cues such as "likes" embedded in the ads. When the social cues are absent, the advantage of advertising on social compared to non-social media for people with high (vs. low) loneliness disappears. The findings suggest that social media ads have a unique appeal for individuals experiencing loneliness and highlight the role of social cues in shaping product evaluations.

Keywords: Social media, Loneliness, Advertising, Social influence, Digital marketing

1. Introduction

Loneliness is a common human experience. 80% of people under 18 years of age and 40% of adults over 65 years of age report being lonely at least sometimes (Berguno et al. 2004). Studies have shown numerous significant psychological and physiological risks of loneliness on human functioning (Luo et al. 2012; Shiovitz-Ezra and Ayalon 2010). In Japan, loneliness was found to predict self-rated health decline and even mortality (Sugisawa, Liang, and Liu 1994).

Perhaps because the most fundamental role of social media is to facilitate social connections (Wilcox and Stephen 2013), existing research on loneliness and social media has predominantly studied how lonely individuals use social media as a networking tool to reduce feelings of isolation (Burke, Marlow, and Lento 2010; Phu and Gow 2019). Here, we shift focus and explore a key area of marketing in which social media is used—as a unique advertising channel. We examine the influence of loneliness on consumers' perceptions of products in social media ads.

Firms have increasingly embraced social media as a primary advertising platform. One major factor that sets social media apart from traditional advertising channels such as television or magazines is its ability to provide a multitude of social cues that signal the presence and reactions of other consumers who are co-consuming the ads in real time (Drenik 2021; Jun, Meng, and Johar 2017). By examining the number of likes, comments, or shares of a post, one can gauge the level of social relevance and popularity of the advertised product. Indeed, social media ads affect consumer decisions across the world. The majority of social media users from South Korea and Pakistani, for example, reported that social media ads influence their buying decisions (Noreen and Han 2015). Compared to traditional media, social media possess a unique characteristic as an advertising channel, enabling consumers to assess the social significance and relevance of a product based on the features that are inherently imbued in the social media platforms. This

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explains why firms are increasingly relying on social media as a major advertising channel, even more so than traditional media such as company websites.

This paper delves into how consumers' experiences of loneliness affect their evaluation of products in social media ads. We posit that experiencing high loneliness drives consumers to be more attuned to product features that are socially determined (i.e., if a product is popular and in fashion). Since social (vs. non-social) media ads convey this information through indicators such as likes, lonely consumers are likely to increase their assessment of products featured in these ads. In the following section, we present the conceptual background and derive our hypotheses.

2. Conceptual background

2.1. Consumer loneliness

Loneliness is defined as the distressing feeling that accompanies the perception that one's social needs are not being met by the quantity or quality of one's social relationships (Hawkley and Cacioppo 2010; Kelley and Thibaut 1978; Peplau and Perlman 1979). Importantly, loneliness is synonymous with perceived social isolation, but not with objective social isolation (Hawkley and Cacioppo 2010). People can lead a rich social life with many companions in their lives and still feel lonely, and conversely, they may objectively lack social ties but not feel lonely. Although the objective lack of social connections and experiences of loneliness seem correlated, that is not always the case. For example, the self-reported physical and mental health of people who were actually living in isolation and those who reported feeling lonely showed distinct results (Coyle and Dugan 2012). Consistent with this notion, we investigate the effect of people's subjective experiences of loneliness, or feelings of loneliness.

Feelings of loneliness can be both measured and temporarily manipulated. Loneliness is typically measured through the items used in the UCLA Loneliness Scale (Russell, Peplau, and Ferguson 1978). This scale includes items such as, "I feel isolated," "I lack companionship," and "there is no one I can turn to." Feelings of loneliness can also be temporarily induced. Recall tasks that require respondents to elaborate on a past social experience that left them feeling lonely, excluded, isolated, or rejected have been widely used to induce feeling of loneliness (Duclos, Wan, and Jiang 2013; Mead et al. 2011; Su, Wan, and Jiang 2019).

Many researchers have studied the role of social media in the "loneliness epidemic," particularly in the post-COVID era (Appel et al. 2020; Chen and Gao 2023; Guner, Erdogan, and Demir 2023). On the one hand, lonely individuals can benefit from using social media because it can provide opportunities to build social capital by interacting with others easily (Gil de Zúñiga, Jung, and Valenzuela 2012; Phu and Gow 2019). The more often undergraduate students used social media, the better integrated into the university community, and the more they were able to intensify offline connections with other students (Ellison, Steinfield, and Lampe 2007). Further, social media can offer lonely individuals access to abundant resources to develop socialization skills (Baker and Perez Algorta 2016; Marker, Gnambs, and Appel 2018). On the other hand, other researchers have found that using social media can increase feelings of loneliness (Burke, Marlow, and Lento 2010), and limiting social media use to 10 minutes can decrease feelings of loneliness (Hunt et al. 2018). Primack and colleagues found a significant correlation between the time and frequency of using social media and perceived loneliness (Primack et al. 2017).

Here, we shift focus from social media as a networking tool and study social media as a unique advertising channel for brands. We examine how feelings of loneliness increase consumers' evaluation of products featured in social media ads. We posit that social media ads have an advantage for consumers experiencing high loneliness because social media ads present not just product information, but also information about other consumers who are also viewing the product via indicators such as likes. Such information is highly pertinent to lonely consumers because they are keen on learning about other people's evaluation of a product.

2.2. Appeal of social media ads

We posit that a key benefit of social media ads for consumers experiencing loneliness is that there are social cues within the ads that signal other people's presence. A unique feature of social media as an advertising platform is the prevalence of social cues such as likes, shares, and comments that are tied to an ad content. In contrast, traditional media lack such cues that instantly inform consumers of other people's thoughts, so consumers of traditional ads may remain unaware of how popular or well-liked a product is. Social cues have been identified as one of the defining characteristics of social media. For example, people reduce vigilance when consuming news information on social (vs. non-social) media because of the embedded social cues (e.g., shares or comments on Facebook) that make people infer that the given information is being consumed by many others

(Jun, Meng, and Johar 2017). Kaplan and Haenlein argued that social media is different from other online platforms of collaborative projects (e.g., Wikipedia) mainly because social media users perceive others to be more "present" through comments or likes (Kaplan and Haenlein 2010).

To confirm that people indeed think that the unique feature of social (vs. non-social) media—and the ads in the media—is that they offer information about other consumers, we conducted a pilot study. Participants ($N = 235$ MTurkers, $M_{age} = 37.98$, 49% male) were randomly assigned to either think about social media such as Instagram, Facebook, and Twitter (social condition), or about non-social media such as brand websites, online magazines, or personal websites (non-social condition). They then answered several questions about the media platform in general as well as the ads they see within the platform. First, we found that people believe that social media platforms in general are better at delivering social information, compared to non-social media platforms. They reported that social (vs. non-social) media offers more information about other people' evaluations ($M_{social} = 5.09$, SD = 1.00; $M_{non-social} = 3.84$, SD = 1.69; $p < .001$) and reactions ($M_{social} = 5.24$, SD = 0.79; $M_{non-social} = 3.67$, SD = 1.72; $p < .001$). Also, they reported that social media has more cues in place (i.e., as embedded features) to deliver information about other people ($M_{social} = 5.25$, SD = 0.94; $M_{non-social} = 3.75$, SD = 1.77; $p < .001$). Second, we found similar results about the ads on the platform. People thought that social (vs. non-social) media ads inform them of other consumers' presence ($M_{social} = 4.91$, SD = 1.04; $M_{non-social} = 3.63$, SD = 1.74; $p < .001$), reactions ($M_{social} = 5.20$, SD = 0.85; $M_{non-social} = 3.73$, SD = 1.78; $p < .001$) and product evaluations ($M_{social} = 4.27$, SD = 1.25; $M_{non-social} = 3.79$, SD = 1.62; $p = .011$). People also thought that social media ads can indicate how well-liked ($M_{social} = 4.32$, SD = 1.26; $M_{non-social} = 3.52$, SD = 1.64; $p < .001$), popular ($M_{social} = 4.51$, SD = 1.44; $M_{non-social} = 4.20$, SD = 1.39; $p = .067$), and trendy a product is ($M_{social} = 4.65$, SD = 1.14; $M_{non-social} = 4.05$, SD = 1.56; $p < .001$). Together, this suggests that a unique feature of social media—and social media *ads*—is that they help consumers learn about other consumers via social indicators such as like counts. We refer to these indicators as product-related social cues.

2.3. Consumer loneliness and social media ads

Given that social media ads have a unique capacity to communicate information about other consumers' evaluation, consumers who care strongly about getting such information and learning about how a product is socially evaluated, i.e., consumers experiencing high (vs. low) loneliness, should prefer products on social media ads. Although the effect of loneliness on social media advertising has not been directly tested, prior work provides evidence as to why loneliness may make people prefer products in social media ads.

Individuals experiencing high loneliness are more attuned to social information than non-social information and alter their behavior accordingly, compared to their counterparts with low loneliness. Those who feel socially excluded have been found to pay particularly close attention to information that involves other people (e.g., memories of past social events involving others; Gardner, Pickett, and Brewer 2000). Further, lonely individuals try harder to detect social cues such as eye gazes and smiles, and try to mimic others' behaviors accurately (Kanai et al. 2012; Lakin, Chartrand, and Arkin 2008; Segrin and Kinney 1995). Mimicry is a common strategy to garner affiliation, but it appeared less among people who felt included in (vs. excluded from) a group. Neuroscientific evidence also shows that lonely individuals prioritize social information. People with high loneliness reacted faster to social threat (e.g., images about social rejection or moments that evoke loneliness) compared to non-social threat (e.g., images of snakes; Cacioppo et al. 2016). In other words, lonely brains are more attuned to social information than non-social information.

Similar findings are found in consumer research. Lonely consumers focus on information about other consumers' product evaluation, and prefer products that are socially relevant (i.e., products that are considered 'in fashion' or popular). Such information about products is contingent on the evaluation of other consumers (Gardner, Pickett, and Brewer 2000; Segrin and Kinney 1995). Lonely consumers are more susceptible to social influence and consensus-related cues, compared to less lonely consumers (Wang, Zhu, and Shiv 2012). Especially when evaluating under public scrutiny, consumers with high loneliness tend to pay close attention to information about product popularity and prefer products that are endorsed by the majority. Further, consumers experiencing loneliness are more likely to purchase a product that is symbolic of a group membership over a practical item, spend money on an unappealing food item that is favored by others, and even report being willing to try an illegal drug when doing so could facilitate social connection (Mead et al. 2011). Together, existing literature suggests that feelings of loneliness drive consumers to be more focused on learning about other consumers and their perceptions of a product.

Based on the findings that lonely people are more attuned to social information such as how a product is evaluated by other consumers, and social media ads can effectively provide that information via social cues, we hypothesize that consumers who experience high (vs. low) loneliness prefer products that are advertised in social media. Formally:

H1. *Individuals who experience high (vs. low) loneliness would prefer products in social media ads.*

Given that those who experience high (vs. low) loneliness have heightened sensitivity to socially imbued information (Gardner, Pickett, and Brewer 2000) and social cues (Kanai et al. 2012; Lakin, Chartrand, and Arkin 2008; Segrin and Kinney 1995), lonely consumers should be more attuned to finding information about other consumers who are also evaluating the product. We thus predict that the positive effect of loneliness (H1) occurs because consumers with high loneliness are more focused on learning about other consumers and their perceptions of a product, i.e., social evaluation of a product. Formally:

H2. *Individuals who experience high (vs. low) loneliness would prefer products in social media ads due to their heightened focus on other consumers' social evaluation of a product.*

We then aim to clarify when lonely individuals would show greater preferences for products in social media ads. On social media, even if direct communication with other consumers is not possible, subtle cues that offer insights into others' presence can provide reassurance and proof that one is not alone in evaluating a product (Jun, Meng, and Johar 2017; Kaplan and Haenlein 2010). Our pilot results further showed that people expect to learn about other consumers' evaluation via social cues on social (vs. non-social) media ads. We thus expect that loneliness would predict higher preference for products in social media ads that offer such cues, but not for products in non-social media ads. Formally:

H3. *When social media ads present social cues (i.e., Likes), individuals with high (vs. low) loneliness would prefer products on social, but not non-social, media ads.*

If lonely consumers prefer products on social media ads insofar as they can learn about other consumers through the embedded social cues, then their preference for social (vs. non-social) media ads should disappear when they cannot find such cues within social media ads. Put differently, when the intuitive social cues are absent, lonely individuals would no longer prefer products in social media ads over non-social media ads. Formally:

H4. *When social media ads lack social cues (i.e., Likes), individuals with high (vs. low) loneliness would no longer prefer products on social media ads to non-social media ads.*

3. Research methodology

3.1. Overview of studies

We test our hypotheses in four experimental studies. We examine the effects of manipulated (study 1) and measured (studies 2–4) loneliness on the evaluation of products that are advertised on a social media platform, i.e., Instagram. Across all studies, we keep constant the type of product that is advertised, i.e., sunglasses, and test how people's feelings of loneliness affect their evaluation of the product. In study 1, we manipulate people's feelings of loneliness using a recall task and test that people who experience high (vs. low) sense of loneliness prefer products in social media ads rather than in non-social media ads (H1). Study 2 provides support for our proposed mechanism by examining the mediating role of lonely individuals' heightened focus on knowing others' social evaluation of a product. Studies 3 and 4 test the boundary conditions and provide evidence for the role of product-related social cues (i.e., like counts) for lonely consumers. Study 3 tests H3 and shows that loneliness predicts higher preference for products in social media ads (that offer social cues), but not for products in non-social media ads (that do not offer social cues). Study 4 further tests the importance of social cues by demonstrating that for lonely consumers, social media ads are no different from traditional ads if they lack any social cues. When social media ads do not show any like counts, lonelier individuals' preference for products in social (vs. non-social) media ads disappears (H4). This suggests that the preference for products in social media ads among individuals with high (vs. low) loneliness hinges on their ability to glean insights into other consumers. Our studies test the advantage of social media ads among consumers with high (vs. low) loneliness across different like counts (i.e., 41 likes in study 1 and 4,691 likes in studies 2–3). Table 1 summarizes each study.

4. Study 1

The goal of study 1 is to test the effect of experiencing loneliness on consumers' preference for products that are advertised on social media. We situationally induced feelings of high or low loneliness, and measured people's relative preference between products

Table 1. Summary of studies.

	Study 1	Study 2	Study 3	Study 4
Goal	To test the effect of loneliness on preference for products in social media ads	To test that the observed effect of loneliness occurs due to heightened focus on the social evaluation of product	To test that the effect of loneliness on preference for products in social (vs. non-social) media ads occurs when social cues are present	To test that the effect of loneliness on preference for products in social (vs. non-social) media ads diminishes when social cues are absent
Participants	$N = 244$	$N = 148$	$N = 113$	$N = 192$
Independent variable(s)	– Loneliness (high vs. low)	– Loneliness score (continuous)	– Media (Non-social media vs. Social media with 4,691 likes) – Loneliness score (continuous)	– Media (Non-social media vs. Social media without likes) – Loneliness score (continuous)
Dependent variable(s)	– Relative preference for products advertised on social media (with 41 likes) over non-social media	– Focus on social evaluation of product – Product evaluation in social media ads	– Product evaluation	– Product evaluation

that are advertised in a social media platform (i.e., company's Instagram page) and a non-social media platform (i.e., company website).

4.1. Method

To examine the effect of experiencing loneliness, we manipulated people's temporary feelings of loneliness and measured the relative preference between the same products advertised on social media and non-social media. Two hundred forty-six US participants ($M_{age} = 38.81$, 63.8% female) were recruited from Amazon Mechanical Turk (MTurk) and completed the online study for a small monetary compensation. Participants were randomly assigned to one of two (loneliness: high vs. low) between-subjects condition.

We first manipulated participants' feeling of loneliness via a recall task (Duclos, Wan, and Jiang 2013; Mead et al. 2011; Su, Wan, and Jiang 2019). Participants in the high loneliness condition elaborated on a past social experience which left them feeling lonely because they were excluded, rejected, ignored, or isolated. Those in the low loneliness condition were asked to recall a past social experience which left them feeling included because they were accepted or welcomed. The participants were further instructed to remember as vividly as they could what this past situation was like. All participants elaborated on the social experience for two minutes.

Next, participants took part in the seemingly unrelated task of evaluating products by looking at product ads (Appendix A). For each question, they were presented with two ads for the same sunglasses simultaneously: one ad that appears in the company's

own website (ad A), and the other ad that appears in the company's Instagram page (ad B). Only the Instagram ad showed like counts (i.e., 41 likes). We asked participants that if they had seen the following two ads, A and B, which sunglasses they would be more likely to purchase from seeing the ad. Participants indicated their preference between these two products (1 = *Definitely prefer product in ad A*, 7 = *Definitely prefer product in ad B*), with higher scores suggesting a greater preference for the sunglasses advertised on social rather than non-social media. Participants reported their relative preferences for five different pairs of sunglasses in total. These five items ($\alpha = .869$) were averaged into a single measure of overall preference for products advertised on social media. Lastly, the participants were asked to rate how "lonely" and "left out" they felt on a scale of 1 (*Not at all*) to 7 (*Very much*). The ratings of the two items were averaged ($r = .91$, $p = < .001$) and served as a manipulation check on the state of felt loneliness (Duclos, Wan, and Jiang 2013). Lastly, participants reported basic demographic information, such as gender and age.

4.2. Results

We excluded the data from two participants who failed our data screening criteria, leaving us with a final sample of 244 participants. Participants in the high loneliness condition ($M = 4.18$, SD $= 1.72$) reported feeling lonelier than their counterparts in the low loneliness condition ($M = 2.18$, SD $= 1.64$; $F(1, 242) = 86.95$, $p = < .001$).

Consistent with our prediction, those who experienced high loneliness were more likely to purchase the sunglasses when they were advertised on social

media (i.e., Instagram) rather than on non-social media (i.e., company website; $M_{high\ loneliness} = 4.52$, SD $= 1.84$ vs. $M_{low\ loneliness} = 3.98$, SD $= 1.94$; $F(1, 242) = 5.02$, $p = .026$). Results from study 1 provide evidence for the basic proposition that consumers who experience high (vs. low) loneliness prefer products that are advertised on social media ads. The next study aims to show the underlying mechanism for the increased preference for products in social media ads among consumers with high loneliness.

5. Study 2

The goals of study 2 are threefold: First, we aim to test the mediating role of lonely individuals' heightened focus on the social evaluation of the product. The reason that consumers with higher loneliness prefer products in social media ads is that they are more attuned to other consumers, or more specifically, knowing product features that are socially determined. For example, whether a product is in fashion or popular is a socially determined information as consumers cannot determine this feature alone; others have to recognize and assess it together. In study 2, we measure the degree to which it is important for the consumer to know the socially imbued product information. Because lonelier consumers focus on knowing social information, they would prefer products in social media ads that convey this information. Second, we measure, rather than manipulate, loneliness using the UCLA loneliness scale (Russell, Peplau, and Ferguson 1978). Third, we increase the number of likes in the social media ads to test if the positive effect of loneliness also occurs for ads with high number of likes (i.e., 4,691 likes). We posit that people's loneliness would positively predict their willingness to purchase products advertised on social media, and this positive effect of loneliness occurs due to higher focus on the social evaluation of the products.

5.1. Method

One hundred fifty-three US participants (49.0% male, $M_{age} = 36.90$) were recruited from MTurk and completed the online study for a small monetary compensation. First, all participants were presented with five social media (i.e., Instagram) ads for the same sunglasses as in study 1, but the ads had 4,691 likes (Appendix B). For each of the five ads, the participants reported their evaluation of the sunglasses using the three items adopted from previous research on loneliness (Wang, Zhu, and Shiv 2012): (1) "I would like to own this item," (2) "This product is appealing," and (3) "I'm interested in trying this product" (1 = *Strongly*

disagree; 7 = *Strongly agree*). The three items ($\alpha = .938$) were averaged into a single measure of overall product evaluation. Next, we measured participants' loneliness, using the UCLA loneliness scale (Russell, Peplau, and Ferguson 1978). The scale contains 20 items that measure people's general experiences of loneliness such as, "I lack companionship" and "There is no one I can turn to" (1 = *Never*; 4 = *Often*).

Then, participants completed a filler sentence unscramble task. The participants then reported their focus on social evaluation of products along three items (i.e., "I care about what products are popular at the moment," "I tend to purchase products that are considered 'in fashion' or trendy," and "I usually know what products are trendy; 1 = *Strongly disagree*, 7 = Strongly agree). The three items ($\alpha = .78$) were averaged to create an index for one's focus on social evaluation of products. This served as our mediator. Lastly, participants reported basic demographic information.

5.2. Results

Data from five participants were excluded from the data analyses because they did not pass the data screening criteria, leaving us with a final sample of 148 participants. To test our hypothesis that loneliness predicts greater preference for products that are advertised on social media, we conducted a regression analysis using participants' product evaluation as the dependent variable and loneliness as the independent variable. As expected, the more people felt lonely in their day-to-day lives, the higher they evaluated the sunglasses that were advertised on social media ($\beta = 0.07$, SE $= 0.03$; $t(146) = 2.14$; p $= .034$).

Given the relationship between loneliness and evaluation of products in social media ads, we tested for the mediating role of people's focus on social evaluation. Loneliness predicted greater focus on social evaluation of products ($p = .005$), as well as greater evaluation of products in social media ads ($p = .034$). SPSS PROCESS macro (Hayes 2013, Model 4) with 5,000 bootstrapped samples revealed a significant indirect effect of loneliness on product evaluation through focus on the social evaluation of products ($\beta = 0.28$, 95% CI [.04, .56], SE $= .13$; see Fig. 1).

Results from study 2 show that experiences of loneliness predict higher evaluation of products advertised on social media, and this positive effect of loneliness occurs due to greater focus on the social evaluation of products. Consumers experiencing higher loneliness are keen on learning socially imbued product information. Therefore, they prefer products in social media ads because these ads tend to be rich with social cues (e.g., number of likes) that
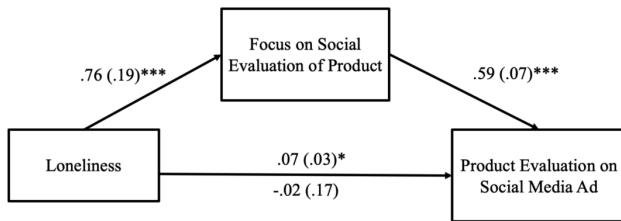
Fig. 1. The mediating effect of focus on social evaluation on the relationship between loneliness and evaluation of products in social media ads (study 2). Note: Unstandardized regression coefficients are shown, and standard errors are presented in parentheses. The coefficient above the path from loneliness to product evaluation represents the total effect without the mediator in the model; the coefficient below the path represents the direct effect when the mediator was included in the model. Coefficients significantly different from zero are indicated by asterisks (*p < .05, **p < .01, ***p < .001).

allow users to learn about others' evaluation regarding how popular and trendy the products are. In the following studies, we further examine the importance of social cues and rule out alternative explanations.

6. Study 3

Study 3 has two objectives. First, we aim to directly test that the increased product preference among lonely individuals occurs for social media ads with social cues, but not for non-social media ads. In a manner akin to real-world scenarios, the social media ad presented the number of likes it received, while the ad on the company's website lacked this indicator. We included likes in the social media ads to mirror the naturalistic settings in consumers' lives. Instagram ads without accompanying likes are exceedingly rare, and it is uncommon for ads on a company website to display social metrics such as number of likes. By treating media platform as a between-subjects factor (i.e., social vs. non-social media), we test that higher loneliness enhances participants' evaluation of products only in social media ads. Second, it is possible that those who experience stronger loneliness prefer products in social media ads because they use social media more frequently. Given prior finding that people tend to use social media to alleviate the feeling of loneliness (Skues, Williams, and Wise 2012; Wilcox and Stephen 2013), it is possible that those who experience higher loneliness enjoy products on social media ads simply because they spend much time on this media platform and are more familiar with it. We aim to test this alternative explanation.

6.1. Method

One hundred twenty-four US participants (M_{age} = 36.01; 41.9% female) were recruited MTurk and

completed the online study for a small monetary compensation. First, all participants were asked to report their general social media use by answering the following questions: (1) How frequently or infrequently do you use social media in general (1 = *Never*, 7 = *Extremely often*), (2) On average, approximately how much time per day do you spend on social media? (1 = *10 minutes or less*, 2 = *10 to 30 minutes*, 3 = *31 to 60 minutes*, 4 = *1 to 2 hours*, 5 = *2 to 3 hours*, 6 = *3 hours or more*), (3) Are you an Instagram user? (*yes, no*).

Next, the participants took part in a seemingly unrelated task of evaluating sunglasses featured in ads. We randomly assigned participants to one of two conditions: social media condition or non-social media condition. The five non-social media sunglasses were identical to the non-social ads used in study 1 (Appendix A). We used the same five social media ads used in study 2 (Appendix B). The participants reported their product evaluation using the same items as in study 2. Then, we measured participants' loneliness using the UCLA loneliness scale, and collected basic demographic information.

6.2. Results

Data from 11 participants were excluded from the data analyses because they did not pass the data screening criteria, leaving us with a final sample of 113 participants. Linear regression was conducted using the media type (−1 = *non-social*, 1 = *social*), mean-centered loneliness score (M = 1.94, SD = .72), and their interaction to predict the product evaluation. As predicted, there was a significant interaction between media type and loneliness ($b = 0.77$, SE = 0.34, $t(109) = 2.28$, $p = 0.024$; see Fig. 2). We applied the Johnson-Neyman procedure to identify regions of significance of the effect of media across different levels of loneliness, and found that the effect of media type became significant at $p = 0.05$ at loneliness score of 3.71 and above ($b = 1.33$, SE = 0.67, $t(109) = 1.98$).
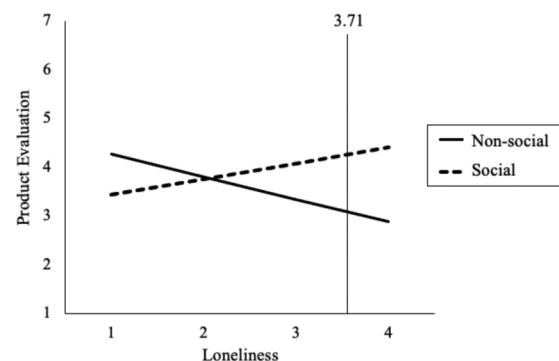

Fig. 2. The effect of loneliness and media type on product evaluation (study 3).

Results revealed there was no significant main effect of media ($b = -0.10$, SE $= 0.24$, $t(109) = -0.41$, NS) or loneliness ($b = -0.46$, SE $= 0.23$, $t(109) = -1.99$, NS).

We then analyzed our data using the variables related to participants' social media use, i.e., general and daily frequency of social media use and whether or not one uses Instagram, as covariates, and our results remained consistent. When these factors were added as covariates, the interaction between loneliness and media type (social vs. nonsocial) remained significant ($p = .034$), while the effects of general frequency ($p = .120$), daily usage ($p = .776$), and whether or not the participant uses Instagram ($p = .344$) were not significant.

In study 3, participants with varying levels of general loneliness evaluated the same products advertised either on social media (with social cues) or non-social media (without social cues). For those who experience high level of loneliness, the same products were evaluated more highly when they were advertised on social (vs. non-social) media. Study 3 also helped rule out general social media use as an alternative explanation for the observed effect. It is unlikely that people who experience high loneliness prefer products in social media ads, simply because they spend much time on social media or are familiar with Instagram. Study 4 further shows the importance of social cues by examining social media ads without like counts.

7. Study 4

If lonely consumers prefer products on social media ads because they can learn about the social evaluation of the products through the embedded social cues, then their preference for social (vs. non-social) media ads should disappear when they cannot find such cues within social media ads. Put differently, when the intuitive social cues are absent, lonely individuals would no longer prefer products in social media over non-social media ads. This implies that consumers with high loneliness favor products in social media ads insofar as these ads can communicate others' evaluation of a product via social cues. We predict that when the social media ads do not convey any social cues, lonely consumers would no longer show greater preference for products in social media ads.

7.1. Method

We recruited participants with varying levels of general loneliness. Two hundred ten US participants ($M_{age} = 38.04$; 45.5% female) were recruited MTurk and completed the online study for a small monetary compensation. First, all participants were told that

they would be evaluating different sunglasses ads created by a marketing company. Participants were randomly assigned to one of two conditions: social-media-without-cue condition or non-social media condition. In the social-media-without-cue condition, participants were given the five Instagram ads as in previous studies, but none of the ads showed the number of likes. In the non-social media condition, participants saw five ads in the company's own website as in study 1 (Appendix A). Then, all participants reported their product evaluation and their loneliness as in study 3.

7.2. Results

Data from 18 participants were excluded from the analyses because they did not pass the data screening criteria, leaving us with a final sample of 192 participants. Linear regression was conducted using the media type ($-1 = $ non-social media, $1 = $ social-medial-without-cue), mean-centered loneliness score ($M = 2.25$, SD $= .63$), and their interaction to predict the product evaluation. There was no main effect of loninss ($b = -0.12$, SE $= 0.13$, $t(188) = -0.98$, NS) or of media type ($b = 0.06$, SE $= 0.08$, $t(188) = 0.71$, NS). Further, there was a null interaction between media type and loneliness ($b = 0.02$, SE $= 0.13$, $t(188) = 0.12$, NS). As predicted, lonely individuals did not increase their preference for products in social media ads when these ads had no information regarding other people's evaluation, i.e., like counts ($b = -0.11$, SE $= 0.18$, $t(188) = -0.56$, NS). Loneliness also did not predict people's preference for products in non-social media ads ($b = -0.14$, SE $= 0.17$, $t(188) = -0.42$, NS).

Study 4 tested the importance of social cues by examining social media ads without any embedded social cues. Results suggest that loneliness increases consumers' preferences for social media ad insofar as these ads can display meaningful cues that inform consumers of other consumers' product perception. Without these social cues, the observed advantage of social media ads over traditional ads disappears among lonely consumers.

8. Discussion and implications

8.1. General discussion

We find that people who experience high (vs. low) loneliness prefer products advertised on social media because these consumes are highly keen on knowing other people' product evaluation, and social media ads can offer this relevant information. Four studies reveal that individuals who experience high sense of loneliness—whether as a temporary emotion or as

a more pervasive aspect of their lives—prefer products that are advertised on social media compared to their less lonely counterparts. This occurs because feelings of loneliness make individuals more focused on knowing other people's perception so they can gauge how trendy and in fashion a product is. As long as social media ads covey such information through social cues such as likes, lonely individuals prefer products advertised on social media. The effect of loneliness occurs for social media ads with varying like counts (i.e., 41 likes or 4,691 likes), but not for social media ads without any likes and traditional ads on a company website.

8.2. Theoretical and managerial contribution

Understanding the effects of consumer loneliness on product evaluation offers several theoretical contributions. First, our findings contribute to understanding how loneliness influences people's consumption behavior, particularly on social media. Previous research on loneliness has focused on how consumption experiences can help alleviate loneliness. Lonely consumers rely on the retailing encounters as a means of social contact, and thus, enjoy retail experiences more than consumers who are less lonely (Forman and Sriram 1991). Consumers who feel excluded prefer dense (vs. sparse) patterns in product designs because dense patterns provide a sense of being "filled" and reduce feelings of isolation (Su, Wan, and Jiang 2019). Similarly, research on social media has been restricted to its role in alleviating loneliness (Ellison, Steinfield, and Lampe 2007; Skues, Williams, and Wise 2012). Limited attention has been given to how loneliness affects individuals' evaluation of products within social media ads. This research fills this gap in literature regarding the impact of loneliness on consumers' perceptions of products advertised in social media platforms.

One previous paper (Wang, Zhu, and Shiv 2012) showed that lonely consumers prefer minority-endorsed products in a private context, suggesting that they may not be susceptible to other people' product evaluation or even ignore it if think they are in private. We tested that the context investigated in our paper—where people see an ad in social media and evaluate the promoted product—is considered a public, rather than private, context. In the same pilot study reported earlier, we found that people think social media (vs. non-social media) is a more public ($M_{social} = 5.47$, SD = 0.68; $M_{non-social} = 4.37$, SD = 1.47; $p < .001$) and less private sphere ($M_{social} = 3.09$, SD = 1.65; $M_{non-social} = 3.54$, SD = 1.67; $p < .001$). Therefore, examining products in social media ads is likely to be considered a public context, whereby lonely consumers are more sensitive to others' thoughts and prefer social media ads.

Exploring the importance of signaling products' social value has managerial implications. Traditional media platforms are starting to integrate various features that allow consumers to learn about the social evaluation of products. For example, television "home shopping" channels in South Korea, which had previously featured a host demonstrating products and receiving orders via phone calls, are now integrating interactive features such as live chats and comments (Kang 2023). Further, live commerce platforms have introduced a novel form of media where viewers observe a live stream of product demonstrations while simultaneously expressing their reactions through comments, questions, and real-time likes. These developments suggest that firms recognize the importance of offering social cues within a media platform to enhance product attitudes.

Our results on social cues also hold importance as firms try to enhance their understanding of consumer sentiments beyond likes. For example, firms are heavily investing in Natural Language Processing, voice and image recognition, emotional analysis, and speech synthesis tools (Guszcza 2018; Sheth 2017). In the future, firms may discern more nuanced and intricate signals of consumer sentiments through methods such as analyzing discussions, behavior patterns, and even physiological data by monitoring sensors in smartwatches. Our results regarding the significance of social cues contributes to the ongoing discourse in understanding the perspectives of online consumers.

Our findings assume added significance in the evolving social media dynamics, including the recent feature to conceal one's like counts (Meta 2021). Our findings suggest that lonely consumers are particularly sensitive to the presence of likes in ads. When users choose to hide like counts on brands' posts, brands could consider other strategies to emphasize social presence, such as utilizing user-generated content (rather than company-focused or celebrity-based content) in their social media campaign, highlighting the social benefits of a product (such as gift options), or creating more inclusive narratives. Even though our studies focused on ad posts, our findings can inform how users may hide – or show – likes on their own personal posts. Given lonely consumers' sensitivity to visible signs of social presence and validation, they may have different preferences to keep likes visible, depending on the expected reactions from others. This raises intriguing avenues for further research on how loneliness may influence self-presentation on social media.

Lastly, our findings can inform firms' decisions on media selection and targeting. We find that consumers consider social media ads to be effective at communicating other consumers' thoughts. Firms can use social media as an advertising channel for warmth-related products or products that encourage interpersonal connection (e.g., Tinder, LinkedIn). Also, the type of relationships depicted in social media ads can be important. According to Chung, Ding and Kalra, showing close social ties in influencers' Instagram posts, such as posting a photo with friends rather than strangers, can predict greater audience engagement with sponsored ads (Chung, Ding, and Kalra 2023). Our study can offer valuable insights on how to target and engage consumers through social media advertising.

8.3. Limitations and future work

In this research, we focused on individuals' subjective experiences of loneliness, as opposed to employing objective measures such as the actual number of social connections. Future work could consider incorporating more objective or sociological correlates of loneliness. For example, factors such as old age and low socioeconomic status have been used as proxies of social isolation (Wenger et al. 1996). After the COVID-19 pandemic, there may be specific communities or groups of individuals who have encountered significant losses in social networks. Dogerlioglu-Demir, Akpinar, and Ceylan (2022) demonstrated that the fear of COVID increased loneliness and desire for social connection. Specifically, they found that inducing a sense of human presence by posting photos in an accommodation-sharing platform increased the likelihood that people who are afraid of COVID stay in the accommodation. Future research can delve into objective indicators or demographic proxies of loneliness.

Our studies offer converging evidence that loneliness increases preference for products in social media ads with social cues (vs. non-social media ads), but this advantage of social media ads disappears when they do not show any likes. We compared non-social media to social media ads with likes in study 3 and to social media ads without likes in study 4, in order to examine the clear boundaries of when social media can (vs. not) outperform non-social media platforms as an advertising channel when brands target lonely consumers. However, future research could directly compare social media ads with (vs. without) likes, or social media ads with varying likes, to clarify the impacts of various social media ad features.

Our studies demonstrate that individuals with higher levels of loneliness prefer products advertised on social media ads; however, this paper remains silent on whether the mere exposure to social media ads can lower individuals' loneliness. We cannot conclusively determine whether seeing social media ads with accompanying social metrics alone can mitigate feelings of loneliness. It is important to note that lonely individuals' preference for products in social media ads does not imply that they utilize these ads as a substitute for social relationships. Yet, given that consumers can experience a sense of personal connection to brands (Chaplin and John 2005) and form meaningful connections in brand communities (Muniz Jr and O'Guinn 2001), brands' social media posts may engender a sense of affiliation and influence feelings of loneliness.

Lastly, we note the potential hazards associated with excessive emphases on products' social significance. Research has shown that fixating on social cues has negative effects on the mental health of social media users, particularly among adolescent users. For example, 43% of teens with low social-emotional wellbeing have reported that they deleted their social media posts because they received too few likes (Statista 2022). It is possible that overemphasizing a product's social relevance, such as its trendiness, could result in some consumers feeling "left behind" on social trends. Although consumers with high loneliness are attuned to information about other consumers, it is crucial to avoid excessive focus on social metrics due to the associated psychological risks.
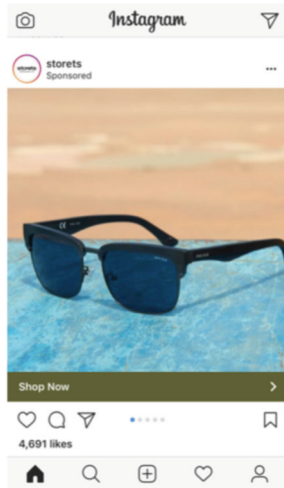
Conflict of interest

The authors declare that there is no conflict of interest.

Appendix
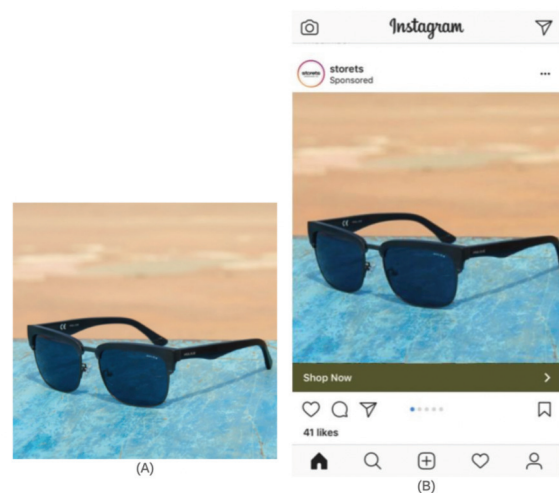
Appendix A. Example of a non-social media ad (A) and social media ad (B) in Study 1.

Appendix B. Example of a social media ad in Studies 2 and 3.

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