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In offline purchasing settings (e.g., retail stores), consumers often encounter reminders that product information can be found on the Internet. The authors refer to a reminder of the availability of online information as a "cue-of-the-cloud" and explore its unique consequences on offline consumer behavior. This research finds that when consumers are presented with relatively large amounts of information in offline purchasing situations, a cue-of-the-cloud can enhance purchase intentions and choice behaviors. This occurs because the cue increases consumers' confidence in being able to retain and access the information seen in-store, which engenders positive feelings about the decision to purchase. Four studies, including two experiments in real brick-and-mortar field settings, demonstrate the consequences of a cue-of-the-cloud, along with some novel moderators of these effects.

Keywords: online, Internet, purchases, information search, cue-of-the-cloud

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The Cue-of-the-Cloud Effect: When Reminders of Online Information Availability Increase Purchase Intentions and Choice

Sienna is shopping at a winery gift store, where she comes across a considerable array of product information including varietals, flavors, tannins, sweetness, and other wine features. This information piques her interest in wine, but it also leaves her somewhat confused and overwhelmed, so she decides not to spend much money during the winery visit. In this research, we propose that Sienna's purchase outcome might have been different had a salesperson in the store simply reminded her that information about the wine could also be accessed on a website. We refer to such a reminder of the accessibility of online information as a "cue-of-the-cloud," and we make the novel proposition that, under certain conditions, such cues can increase consumers' purchase behaviors that occur in offline contexts.

Despite a growing role of the Internet in consumers' lives (Nielsen 2014), most consumer purchases today take place in "brick-and-mortar" stores, not on e-commerce websites. The U.S. Census Bureau (2016) estimates that in 2015, less than 8% of U.S. retail sales were transacted through e-commerce, and offline purchases accounted for the majority of retail sales in most major product categories. Although the relative share of consumer purchases that occur online (vs. offline) will likely increase, brick-and-mortar stores will surely continue to be an essential venue for shopping for many product categories. As such, one important question to examine is "How does the increasingly pervasive presence of the Internet interplay with consumer spending that occurs in physical retail contexts?" To that end, some research has examined how consumers learn product information in physical retail contexts, only to later purchase the product on an e-commerce site, a cost-saving tactic known as "showrooming" (Neslin et al. 2014). This research has focused on how the Internet competes with brick-and-mortar stores as a purchase channel, demonstrating

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that what consumers experience in physical retail contexts can influence what they do in online settings.

In contrast to this prior work, we look at a very different, but common, way in which the existence of the Internet intersects with offline consumer decisions. In particular, we study how an in-store reminder that product information is online, which we term a "cue-of-the-cloud," subsequently affects purchase decisions that take place entirely in offline contexts. Product information in the "cloud" is often cued indirectly or directly in stores. For example, Sienna may see a URL for the winery's website on signage, or a salesperson might refer to the website. In these cases, the mere mention of the website's existence makes the winery's online information more salient, even if Sienna never visits the website. Our research endeavors to understand how Sienna might interpret this cue-of-the-cloud and how it might subsequently affect her purchase decision.

First, this research demonstrates a novel phenomenon whereby a cue-of-the-cloud increases purchase intentions and choice behaviors when consumers are exposed to relatively large amounts of product information in offline purchase settings. Research has documented the great extent to which people today rely on the Internet for the retention and processing of information (Barr et al. 2015; Sparrow, Liu, and Wegner 2011; Ward 2013a, b). While some extant research has shown that relying on the Internet has detrimental consequences for human information processing (e.g., reduced encoding and less thoughtful processing), relatively less attention has been devoted to examining the potential positive consequences of the Internet on consumer cognitions and subsequent behaviors. We demonstrate that, under certain conditions, a cue-of-the-cloud positively affects consumers' purchasing behaviors in brick-and-mortar settings.

Second, we propose and find that because the cue-of-the-cloud delegates responsibility of memory retention to the Internet, consumers feel more confident that they can readily bring to mind the product information that they see in the store, which, in turn, engenders positive feelings about a decision to purchase. Our results suggest that, by default, a cue-of-the-cloud improves consumers' confidence toward their ability to later access the current information under consideration. Accordingly, we find that a cue-of-the-cloud does not enhance purchase intentions when the cue primarily highlights *additional* product information (i.e., information not currently available in the decision context) that is available online.

Third, we reveal a key boundary condition of the observed effects related to the amount of information that is provided in the offline purchase setting. Consistent with our framework, a cue-of-the-cloud has benefits in environments where a high amount of information is being presented to the consumer (i.e., under conditions in which consumers may naturally experience a relative lack of ease of retaining and accessing product information). However, in environments with a low amount of information, these benefits are not observed, and a tendency toward a "backfire effect," wherein consumers' reactions are more negative in the presence of a cue-of-the-cloud, can even emerge. In summary, our research reveals important ways in which cues of the Internet can positively or negatively influence subsequent purchase decisions in offline settings.

CONCEPTUAL FRAMEWORK

Effects of Online Information Availability on Information Processing

Consumers have always utilized external information sources to learn about products and services (Settle 1972; Westbrook and Fornell 1979). These sources include salespeople, in-store signage, product packaging, and, increasingly, the Internet. Importantly, cuing the Internet may have distinct consequences for consumer behavior that are not observed when other information sources are cued. This is because the Internet is an information source unlike any we have seen before. In an unprecedented development, many consumers now have access to a wealth of information in their pockets (Clowes 2015; Rosen and Carrier 2012; Sparrow et al. 2011). The extreme convenience and omnipresence of the Internet are "supernormal" characteristics (Ward 2013b); the Internet amplifies what traditional sources of information can offer, and consequently, we propose that consumers will react to a cue that information is available online very differently than a cue that information is available from an offline source.

Preliminary evidence for the proposition that the Internet has a qualitatively distinct influence on people is reported by Sparrow et al. (2011), who find that people have habitually learned to offload responsibility of retaining information in memory to the Internet. Rather than encoding and storing information themselves, individuals intend to look up the information online when it is needed. Moreover, recent research has found that people commonly avoid effortful reasoning by using their smartphones for memory and cognition (Barr et al. 2015; Loh and Kanai 2015). As a result, people misattribute knowledge that they can access online to knowledge that they hold themselves (Ward 2013a, b). In summary, recent research has suggested that long-term Internet use has given rise to a unique set of cognitive associations and behaviors. Thus, a reminder that information is available online may have distinct implications for downstream consumer behaviors.

The Influence of a Cue-of-the-Cloud on Offline Consumer Purchase Decisions

We draw upon this prior work to examine how a reminder of online product information operates during offline purchase decisions. In our work, we use the term "cue-of-the-cloud," in reference to "the cloud" (server networks that store data) because this term emphasizes a critical function of the Internet, that of storing information (Sparrow et al. 2011). Specifically, we argue that due to the Internet's unique properties (i.e., convenient, accessible, and omnipresent) and its function as a transactive memory partner (Sparrow et al. 2011; Ward 2013b), when consumers encounter a cue-of-the-cloud, it activates a feeling that responsibility for retaining burdensome product information has been delegated to the Internet. The cue leads consumers to feel that even if they do not know all the currently presented information, the Internet facilitates ready access to this information at any time. In reality, the information may only be "up there," in the cloud, and not stored "locally," in one's own mind. Still, the cue-of-the-cloud may lead consumers to feel more confident that they can personally access the currently presented information. Research has found that people feel

greater cognitive confidence when they can access information online (Ward 2013a, b), suggesting that people may blur the distinction between what information they can access internally from their own minds and what information they can access by using the Internet as an external information source.

Furthermore, we propose that when consumers feel this increased confidence in information access, it engenders positive feelings about a decision to purchase. Much research has shown that consumers rely on confidence and other "metacognitive" feelings in decision making (e.g., Novemsky et al. 2007; Schwarz 2004, 2006; Simmons and Nelson 2006). This prior work has shown that increased confidence during a purchase decision leads to more positive product attitudes and greater purchase inclinations. Likewise, we predict that when a cue-of-the-cloud instills confidence in access to product information, it will increase purchase behaviors.

In summary, our first prediction is that in offline purchasing decisions, consumers' purchase intentions and choice behaviors will be enhanced by exposing them to a reminder that product information is available on the Internet (i.e., a cue-of-the-cloud) compared with when no such cue is provided or when consumers are exposed to an equivalent reminder that product information is available through an offline resource (e.g., a brochure). More formally, we predict:

H_1: Consumers who are exposed to a reminder that product information seen in the retail context is available online (a cue-of-the-cloud) exhibit more positive purchase intentions and choice behaviors compared with consumers who receive no information source cue and consumers who are exposed to a reminder that product information seen in the retail context is available from an offline source.

The Moderating Role of Cuing Additional Information

Our conceptual framework proposes that a reminder of online product information increases confidence because a cue-of-the-cloud encourages consumers to focus on implications of the reminder for information that they are currently exposed to in the store. Consistent with this contention, prior work has shown that decision makers mostly restrict their thoughts on salient, current information that they are explicitly presented with (Frederick et al. 2009; Kahneman and Frederick 2002; Slovic 1972). Thus, a cue-of-the-cloud should influence how consumers react to the *currently available* information. If the cue were instead to signal to consumers that there existed *additional* information online that they did not currently have access to, it would be less likely to instill confidence in the manner that we predict. Awareness that there is even more information available online to be learned might even create some degree of cognitive discomfort. More specifically, in this latter case, consumers might feel lower confidence in their ability to access relevant product information, leading to diminished feelings about the purchase decision. In summary, we propose that our hypothesized effect of a cue-of-the-cloud will be moderated by the type of information that is cued. When the cue-of-the-cloud focuses consumers on currently available information, we should observe more positive consumer intentions and behaviors (similar to consumers' default response). However, when the cue is specified to refer to additional online information, our predicted cue-of-the-cloud effect will not emerge. Thus,

H_2: A reminder of a product's online information (a cue-of-the-cloud) does not enhance purchase intentions (vs. no cue-of-the-cloud) if this reminder primarily draws attention to the availability of more information online (i.e., information over and above what is seen in the store).

The Moderating Role of Low Versus High Amount of Information in the Environment

Our conceptualization further suggests that the positive effects of a cue-of-the-cloud will emerge only under conditions wherein increased confidence in accessing product information will be beneficial to the consumer. Correspondingly, we examine the moderating role of amount of product information presented in the offline context. Prior research has found that once product information exceeds a certain amount, it can negatively affect consumers' confidence in their decision-making process (Jacoby 1977, 1984; Jacoby, Speller, and Berning 1974; Malhotra 1982) because consumers feel confused about their understanding of the product (Eppler and Mengis 2004; Haksever and Fisher 1996; Lesca and Lesca 1995; O'Reilly 1980). This lower confidence might reduce consumers' inclination to make a purchase decision (Baldacchino, Armistead, and Parker 2002; Dhar 1997).

Drawing on our contention that a cue-of-the-cloud leads to a feeling of confidence in accessing information, we predict that in environments with a high amount of information, the cue-of-the-cloud will positively influence purchase decisions by counteracting the perceived difficulty of accessing information. Accordingly, in a high-information environment, purchase intentions will be greater with a cue-of-the-cloud (vs. without such a cue). However, we do not anticipate positive effects of a cue-of-the-cloud in environments with a low amount of information, when there is little information burden to alleviate and the potential beneficial effects of a cue-of-the-cloud are lower.

It is also possible that under conditions of low amounts of information, a backfire effect (i.e., reduced purchase intentions) may emerge from exposing consumers to a cue-of-the-cloud. Because the Internet functions as a transactive memory partner (Sparrow et al. 2011; Ward 2013a, b), having information accessible in the cloud helps to support cognition, but it also prompts a reliance on online information. When little information is given in the purchase setting, the cue-of-the-cloud may make salient to the decision maker that s/he should determine what (if any) further information is online, and, conditional on there being more information online, that s/he must also access and process it. Therefore, in a low-information environment, a cue-of-the-cloud could burden consumers by signaling the need to search online for additional product information, which could be perceived as conspicuously absent in the current offline setting. Following from this idea, we predict that information amount will moderate the hypothesized effect. As noted earlier, under high-information conditions (when a relatively large amount of information is provided offline), a cue-of-the-cloud will lead to more positive purchase intentions than no cue-of-the-cloud. In addition, we propose the following:

H_3: In low-information environments (when relatively little information is provided offline) a cue-of-the-cloud does not lead to greater purchase intentions (vs. no cue-of-the-cloud) and may lead to lower purchase intentions.

Overview of Empirical Studies

We present four studies that provide converging evidence for our conceptual framework outlining the positive effects of a cue-of-the-cloud on purchase decisions. Study 1 was conducted in the field at a wine festival and supports the main prediction that a cue-of-the-cloud increases purchase intentions relative to when there is no cue present. Study 2 replicates this result in a controlled laboratory setting, using a sleep aid–purchasing scenario, and shows that increased confidence in information access mediates the positive effect of a cue-of-the-cloud on purchase decisions. Study 3 further shows how a cue-of-the-cloud affects wine purchases in a field study and also demonstrates the moderating role of the amount of information provided in the store environment. Finally, Study 4 shows that the cue-of-the-cloud effect is moderated by whether the cue focuses on currently available versus additional online product information.

STUDY 1: PURCHASE INTENTIONS AT A WINE FESTIVAL

In Study 1, we sought to demonstrate the cue-of-the-cloud effect in a field setting: a wine festival. Customers were presented with either a cue-of-the-cloud, a cue to a printed information sheet that they could take with them, or no cue before they learned a moderate amount of information about a wine. Consistent with H_1, we expected that purchase intentions for the featured wine would be greater when consumers were presented with the cue-of-the-cloud versus a control condition and a cue-of-information-sheet condition.

Procedure

Participants were 438 customers (M_{age} = 45.71 years, 61.36% female) at a Canadian wine festival. Seven people gave incomplete data (e.g., did not respond to the main dependent measure), so we used N = 431 for the analysis. The study had a three-cell (cued information source: no cue, cue-of-information-sheet, cue-of-the-cloud) between-subjects design. We collected data over four weekends and alternated conditions on different days. The study took place during a wine festival, when wineries across the region showcased their wines. We focused our investigation on consumers' response to a new wine batch that was presented at the festival, a 2013 sauvignon blanc, which customers sampled with food. Revenue to the festival was primarily from festival touring passes ($44.25 per person), rather than bottle sales.

Customers entered the tasting area, where they were greeted by a representative for the maker of the featured wine. We manipulated the cued information source through the representative's statements and signage. In the no-cue condition, she did not mention any information source. The nearby sign read, "Visit us at our winery in any season!" (Appendix A). In the cue-of-the-cloud condition, the representative mentioned that information about the sauvignon blanc was available online. The sign read, "Visit us on the web, where you can always access information about this wine!" We also placed a tablet nearby with this wine's website open. Finally, in the cue-of-information-sheet condition, the representative referred to a stack of sauvignon blanc information sheets that customers could pick up, read, and take home. The sign read, "We have an information sheet about this wine that you can pick up anytime!" In both cue conditions, the cue referred to accessing information about the featured sauvignon blanc.

After cuing the information source, the representative described the sauvignon blanc's product characteristics (e.g., flavors, preparation methods) with a moderate-length information script (Appendix A). Customers were then given a brief survey that was identical across conditions. As our key dependent measure, they indicated their inclination to purchase the sauvignon blanc on a seven-point scale (1 = "not at all likely," and 7 = "very likely"). To account for differences across individual variability in customers' responses to the wine information, we also measured wine knowledge. Customers responded to the prompt, "How knowledgeable are you about wine (in general)?" on a ten-point scale (1 = "not at all knowledgeable," and 10 = "very knowledgeable"). This measure has been pretested and shown to be valid in the wine marketing literature (D'Alessandro and Pecotich 2013). Because this study was conducted as customers sampled wine and food, the winemaker asked that we keep the survey as brief and easy to answer as possible, so we did not measure any process variables.

Results

Purchase intentions were subjected to an analysis of variance (ANOVA) with independent factors of cue presented at the festival (1 = no cue, 2 = cue-of-information-sheet, 3 = cue-of-the-cloud) and wine knowledge (M = 5.97, SD = 1.90) as a covariate ($F(1, 427) = 15.34$, $p < .001$). A planned contrast found that purchase intentions were higher in the cue-of-the-cloud condition (M = 4.93, SD = 1.76) than in the no-cue condition (M = 4.42, SD = 1.80; $F(1, 427) = 4.52$, $p < .05$). Purchase intentions in the cue-of-information-sheet condition (M = 4.78, SD = 1.85) were not significantly different from the no-cue condition ($F(1, 427) = .83$, $p = .36$). Although purchase intentions were directionally higher in the cue-of-the-cloud condition compared with the cue-of-information-sheet condition, the contrast between these two conditions was not significant ($F(1, 427) = 1.23$, $p = .27$). The same pattern and significance of results held without the control for wine knowledge.

Discussion

Study 1 demonstrates the cue-of-the-cloud effect in a real, offline field context, a wine festival. Indeed, purchase intentions were significantly increased compared with a no-cue control condition only when a cue-of-the-cloud (and not when a cue-of-information-sheet) was present. However, one limitation of Study 1 is that we did not find a significant difference in purchase intentions between the cue-of-the-cloud condition and the cue-of-information-sheet condition. This result may reflect the many possible sources of noise in a field setting, such as variations across customers in attention during the festival and

variations across the winery's staff in terms of communication styles. To address this issue, we ran Study 2 in a controlled laboratory setting, to further test the unique effect of a cue-of-the-cloud (vs. a cue of an offline information source) on consumers' purchase intentions.

STUDY 2: MEDIATING ROLE OF CONFIDENCE IN INFORMATION ACCESS

To further enhance the generalizability of our results, Study 2 investigates the cue-of-the-cloud effect utilizing a different target product, Sleep Sheets, a package of small strips that dissolve on the tongue to secrete melatonin and enhance sleep. A sleep aid is a suitable domain for this study because consumers may wish to learn substantive product information prior to a purchase decision, and there are purchase risks. Participants in our lab read a scenario in which customers learn information about Sleep Sheets at a store. As in Study 1, we manipulated whether participants were reminded of the product's website or a printed brochure, and in a control condition, no information source was mentioned. Participants then reported their purchase intentions for this product. Another objective of Study 2 was to test our proposed process: that a cue-of-the-cloud enhances purchase intentions by improving decision makers' confidence in their ability to access the product information that appears in the offline setting. To test this mechanism, we measured participants' felt confidence in information access as a mediator.

Procedure

Participants were 164 undergraduate students at a large public U.S. university (M_{age} = 21.45 years, 50.61% female) who completed the study in a behavioral lab for course credit. All participants first read a brief introduction on Sleep Sheets stating that it was a sleep aid product. They also saw a picture of the product's package (Web Appendix A). Next, participants were asked to imagine that they came across a display for Sleep Sheets at a grocery store, where a sales representative explained the product. Next, a three-cell between-subjects manipulation of information cue occurred. The no-cue scenario had no mention of an information source. In the cue-of-information-sheet condition, participants were told that information about the product could be read from a printed 8.5″ × 14″ three-panel brochure, and as customers, they would be able take this brochure with them. In the cue-of-the-cloud condition, the grocery store display showed the Sleep Sheets mobile website displayed on a smartphone (Web Appendix A), and the representative mentioned the Sleep Sheets website that had product information. Thus, in the latter two conditions, participants were made aware of a source of product information, either a printed brochure or a website.

Next, participants were given information about the Sleep Sheets product. We designed Study 2 to ensure better experimental control over the product information that participants received, but we also wanted participants to listen to the product information, as did customers at the wine festival in Study 1. Therefore, we presented this information in an audio recording. Participants listened to a two-minute recording of a female spokesperson explaining the Sleep Sheets product. This recording had a high amount of product information, including the product's function, its active ingredients, and its potential side effects. A transcript of this audio recording is available in Appendix B (see "High-Information Script").

After hearing the audio recording, participants rated their purchase intentions for the product on a three-item (α = .91), seven-point scale (1 = "not at all likely," "not at all inclined," and "not at all willing," and 7 = "very likely," "very inclined," and "very willing," for the three items, respectively). Next, to measure participants' felt confidence in information access, we asked them to respond to a three-item scale (α = .88), adapted from Ward (2013a, b), which focused on participants' current subjective feelings. On a seven-point scale of agreement (1 = "strongly disagree," and 7 = "strongly agree"), participants rated the statement "Right now I feel ..." with each of the following endings: (1) "confident that I can access information about this product at any time to make an informed choice," (2) "that I know where to look to find information about this product that I don't know myself," and (3) "that even if I don't know some information about this product right away, I know that I can access it." Order of the dependent variable (purchase intentions) and the mediator measure (confidence in information access) was counterbalanced.

Results

Purchase intentions. The cue-of-the-cloud condition had significantly higher purchase intentions (M = 4.93, SD = 1.35) compared with the no-cue-condition (M = 3.84, SD = 1.64; $t(161) = 13.97$, $p < .001$) and the cue-of-information-sheet condition (M = 4.16, SD = 1.57; $t(161) = 6.86$, $p < .01$), consistent with H_1. Order of measures did not significantly influence purchase intentions ($F(1, 158) = .02$, $p > .87$), nor did it interact with the type of cue to predict purchase intentions ($F(1, 158) = .87$, $p > .41$). Importantly, the two contrasts (cue-of-the-cloud vs. no-cue, cue-of-the-cloud vs. cue-of-information sheet) remained significant when we controlled for order of measures (both $F(1, 160) > 6.79$, $p < .05$).

Confidence in information access. Participants felt greater confidence in information access in the cue-of-the-cloud condition (M = 5.87, SD = 1.22) compared with the no-cue condition (M = 4.37, SD = 1.38; $t(161) = 34.32$, $p < .0001$) and the cue-of-information-sheet condition (M = 5.28, SD = 1.38; $t(161) = 5.27$, $p < .05$). Order of measures did not significantly influence confidence in information access ($F(1, 158) = .87$, $p > .35$), nor did it interact with the type of cue to predict confidence in information access ($F(1, 158) = 1.26$, $p > .28$).

Mediation analyses. We tested our hypothesized process in a mediation analysis (Hayes 2008) employing Hayes's (2012) PROCESS macro with bootstrapped samples (5,000). The model predicts purchase intentions with independent factor of cue-of-the-cloud (1 = no cue-of-the-cloud; 2 = cue-of-the-cloud present) and confidence in information access as the mediator. This analysis showed complementary mediation (Zhao, Lynch, and Chen 2010). That is, when confidence in information access was the mediator, there was a significant (but reduced) direct effect of cue-of-the-cloud on purchase intentions (β = .59; $t(161) = 2.27$, p = .025), and the indirect mediation effect (i.e., the effect of cue-of-the-cloud on purchase intentions via confidence)

was also significant (β = .35, 95% confidence interval: .1396, .6622]).

Discussion

Study 2 demonstrates that a cue-of-the-cloud (vs. no cue or a cue to an offline information source) enhances purchase intentions (H_1). Furthermore, Study 2 was conducted in a controlled laboratory setting designed to reduce the possible sources of noise that appeared in Study 1's field context. As such, we found that a cue-of-the-cloud condition had significantly higher purchase intentions than a condition in which participants were cued with an equivalent reminder that product information could be found on a printed brochure that they could take with them. Importantly, Study 2's results also supported our proposed process through a mediation analysis. We found that a cue-of-the-cloud increased participants' confidence in the accessibility of product information, which, in turn, increased purchase intentions.

STUDY 3: FIELD STUDY AT A WINERY

The purpose of Study 3 was to demonstrate that the beneficial effect of a cue-of-the-cloud on purchase intentions, observed in Studies 1 and 2, translates into real in-store purchases. To that end, we conducted a field study in which we measured sales at a winery retail store. In this study, the cue-of-the-cloud referenced online information about all the wines available at the winery, corresponding with our dependent variable of customers' overall spending on wines. In comparison, in Study 1, we presented a cue concerning information about only one particular wine, for which we immediately measured purchase intentions. By examining a different situation in Study 3, we seek to further generalize our findings by showing that a cue-of-the-cloud can influence purchase decisions even when consumers have multiple product options about which they learn product information.

Another objective of Study 3 was to test the moderating role of amount of information in the environment. Recall that in Studies 1 and 2, participants were presented moderate to high amounts of information, and we found positive effects of a cue-of-the-cloud (vs. no cue) on purchase intentions. Our framework further proposes that this effect should predominantly occur under conditions in which increased confidence in information retention and access will be beneficial to consumers' purchase intentions. Thus, we expect a cue-of-the-cloud to increase purchase intentions in an in-store environment with a high (but not low) amount of information (H_3). Our conversations with the winery's manager indicated that most customers at this winery are wine novices, who, unlike experts in this domain, would tend to have uncertain preferences and relatively less experience in processing wine information. Therefore, this was an appropriate setting in which to manipulate how much wine information customers should learn and consider in their purchasing decisions.

The study had two between-subjects manipulations. First, the winery's website was either cued or not cued in the store. Second, a winery representative described wine features in a way that communicated either a low amount or a high amount of product information. Following our conceptual framework, we anticipated that in the high-information environment, compared with when no cue was present, the cue-of-the-cloud would increase customers' confidence in their access to the wine information, resulting in greater sales (H_1). In contrast, we predicted that in a low-information environment, when there was little information burden to alleviate, the cue-of-the-cloud would not enhance sales, because this was not a setting in which such confidence would be pertinent. Instead, consistent with our earlier prediction (H_3), the cue-of-the-cloud could even decrease purchases in a low-information environment because it would place a burden on consumers to determine whether there was some online information that was unavailable in the offline sales encounter.

Procedure

Participants and design. Participants were 133 customers at a Canadian winery (median age = 37.5 years). The study was a 2 (cue-of-the-cloud: no cue vs. cue present) × 2 (information in the environment: low vs. high information) between-subjects design.

Procedure and stimuli. We conducted the study over two weekends at the winery. Unlike Study 1, this study did not take place during a festival to which consumers had already purchased admission but at a winery's retail store on a regular weekend. Here, customers spend money on wine tastings and wine bottles ($10–$200 each). Our data collection was during times when the store was heavily frequented by tourists (weekends 11 A.M.–5 P.M.). We alternated conditions roughly every hour on each day. All data collection days had similar store revenue and the same wine sample (the "Rosso" Cabernet Merlot).

As customers entered the winery's retail store, they saw a sign inviting them to a wine tasting in the store's event room. Here, a winery representative greeted customers. Just after this initial greeting, in the cue-of-the-cloud condition, the representative told customers, "We have a website, where you can find information on all our wines." She pointed to a tablet that had the winery's home page open. In the no-cue condition, there was no tablet and the website was not mentioned.

Next, the representative described wine with one of two information scripts. For the script with a low amount of information, she simply offered customers a free wine sample, which was presented as an example of the winery's main products. For the script with a high amount of information, while pouring the free sample, she mentioned various wine features, including ingredients, preparation method, and paired foods (for scripts and pretest results, see Web Appendix B). Although the representative described only the sampled wine's features, we expected that this script would go further in its effect, by guiding customers to consider many wine features when learning about wines at this winery. Customers could reasonably assume that the information given for the sampled wine would also be found for the other wines there.

After their free wine tasting, customers were given a short survey on an index card. They could fill out the survey at any time before purchase to receive a $2 in-store discount. The survey measured perceived taste and quality of the sampled wine (seven-point scale), previous visits to this winery, and self-reported wine knowledge (seven-point scale). We designed the card's image and text to keep the cue manipulation active while customers browsed

further in the store (see Web Appendix B). The no-cue condition card had a picture of the winery and a phrase above: "Visit us at our winery in any season!" The cue-of-the-cloud condition card had a screenshot of the winery's website displayed on a tablet and a phrase above: "Visit us on the web where you can always access information about our wine!"

While customers browsed in the store, there was more wine information available to learn, but they had to seek out this information by reading wine bottles and store signs or by speaking with the winery staff. We expected that the initial script that had a high amount of information would guide customers to consider a greater amount of the later information in their purchasing decisions. Additional browsing typically lasted 10–30 minutes. At checkout, customers' surveys were stapled to their purchase receipts. Pairs or groups of customers who purchased items under one transaction had their surveys attached to their one receipt.

Results

Ratings of wine. The four conditions had similar ratings on perceived taste (M = 4.26–4.92) and perceived quality of the sampled wine (M = 4.76–5) and how knowledgeable customers felt about wine in general (M = 3.48–4.32), which was near the scale midpoint. The manipulations did not significantly affect these measures (all $F(1, 129) < 1.21$, all $p > .25$).

Purchases. Customers' purchases at this winery are primarily discretionary, and most customers (73.68%) had not visited this winery before. Thus, we did not expect customers to have a firm transaction amount or a habitually purchased option in mind. Instead, we expected that the manipulations would affect how much money customers spent on wine, our key dependent variable, because consumers tend to constrain purchases when they lack confidence in retention of product information (Dhar 1997; Eppler and Mengis 2004).

Purchase amounts ranged from $0 to $177.80. All surveyed customers' data were retained, and results held when we excluded outliers. The 133 surveyed customers completed 75 transactions, of which 31 were from individual customers, 35 were from pairs, and 9 were from groups of three to five customers. We report an analysis on "partial purchases," in which we divide each transaction by the number of attached customers. For instance, if a couple spent $50, we assign both the husband and the wife a $25 partial purchase. In follow-up analyses, we (1) log-transformed purchase amounts, (2) performed a Poisson regression model on a count of bottles purchased, and (3) analyzed the 75 purchasing "units" (individuals, pairs, or groups) with a control for group size. Results supported our hypothesis across all these analyses.

The 133 surveyed customers' partial purchases were subjected to an ANOVA with independent factors of cue-of-the-cloud condition and information amount. There were significant main effects of cue-of-the-cloud condition ($F(1, 129) = 6.89$, $p < .01$) and information amount ($F(1, 129) = 6.35$, $p < .05$), as well as a significant two-way interaction ($F(1, 129) = 8.59$, $p < .01$). Planned contrasts revealed that in a high-information environment, purchases were greater with a cue-of-the-cloud (M = $25.28, SD = $30.92) versus without the cue (M = $14.20, SD = $11.39; $t(129) = 6.89$, $p < .01$), consistent with H_1. However, consistent with H_3, a cue-of-the-cloud did not enhance purchase intentions in a low-information environment, and in fact, purchases were directionally lower with the cue-of-the-cloud (M_{cue} = $10.86, SD = $8.55 vs. $M_{no\ cue}$ = $18.95, SD = $17.62; $t(129) = 3.02$, $p = .08$), although this result failed to reach conventional levels of statistical significance. The analysis of the 75 purchasing units' transactions also produced a significant interaction ($F(1, 70) = 5.66$, $p < .05$; see means in Figure 1). These results held when we controlled for our other measured variables.

Discussion

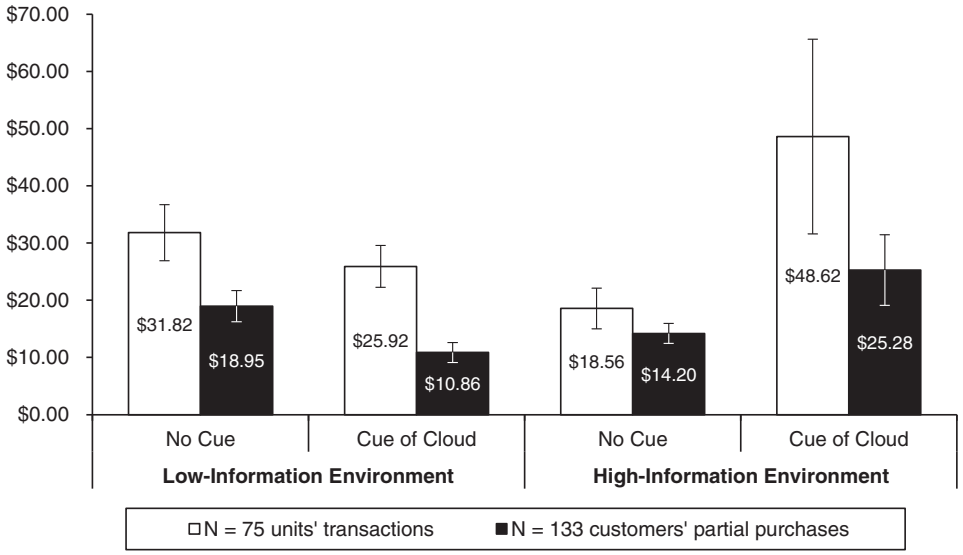
Study 3, a field study conducted at a winery, showed that a cue-of-the-cloud affects in-store purchases in a situation in which customers encounter and learn product information organically during a store visit. In addition, this study showed that amount of information in the offline environment moderated the cue-of-the-cloud effect, consistent with H_3. Because the customers were primarily wine novices, the winery's representatives were able to guide customers to consider a lot of (vs. very little) wine information in their purchasing decision. Our results suggest that when customers began their winery store visit with a cue-of-the-cloud, a reference to the winery store's website, the high amount of information was felt to be less formidable. In fact, wine purchases were greatest in the high-information environment/cue-of-the-cloud experimental cell.

While this result identifies a benefit of a cue-of-the-cloud, marketers should also heed the potential for a backfire effect. In a low-information environment, we found a nonsignificant trend such that a cue-of-the-cloud lessened sales. Overall, Studies 1–3 show that a cue-of-the-cloud affects purchase intentions and actual choices. In these studies, the cue-of-the-cloud alerted customers to a product website, but customers were not told whether the website had the same information that they learned in the store or other information not currently presented to them. So the question remains: What does the cue actually alert consumers to (i.e., the same information that is currently being presented or additional information that is not currently available to the consumer)? Study 4 examines this distinction.

STUDY 4: CUING CURRENT VERSUS ADDITIONAL PRODUCT INFORMATION

In Study 4, we again test our prediction concerning the moderating role of amount of information in the environment (H_3) with Sleep Sheets as our target product. Importantly, we also sought to test the moderating role of whether the cue makes salient currently available or additional product information. Drawing on prior work (Frederick et al. 2009; Kahneman and Frederick 2002; Slovic 1972), our framework suggests that consumers' default tendency is to largely focus on the implications of the information that is currently available. Thus, we expect that if a cue indicates that the same information that will be explicitly presented in store is also online, then this cue should act similarly to an unspecified cue that has no explanation about what specific information is online (as in our earlier

Figure 1
WINERY FIELD STUDY PURCHASE RESULTS



Notes: Data displayed are transaction amounts for the field winery study (Study 2). There were 75 transactions for 133 customers who completed a survey. The smaller, black columns depict computed "partial purchases" for the 133 surveyed customers. The larger, white columns depict transaction amounts for the 75 "purchasing units." Error bars represent standard errors of the mean.

studies). In contrast, we predict that if the cue alludes to the existence of more information online (i.e., additional decision inputs not in the store), then this will not instill confidence concerning the currently available information. In fact, such a cue may further burden consumers (i.e., because it implies there is additional information to be obtained) and reduce purchase intentions in a high-information environment. The identification of this boundary condition also supports our hypothesized mechanism because when the cue-of-the-cloud fails to instill confidence (i.e., it simply points to the existence of even more external decision inputs that would need to be accessed), positive purchase intentions are no longer observed.

Procedure

Participants and design. Participants were 251 undergraduate students at a large public U.S. university (M_{age} = 21.26 years, 50.60% female) who completed the study in a behavioral lab for course credit. The study was a 4 (information cue: no cue, more-info cue, same-info cue, unspecified cue) × 2 (information in the environment: low vs. high information) between-subjects design.

Procedure and stimuli. We presented the scenario to participants on a paper survey. All participants first read a brief introduction on the Sleep Sheets scenario (similar to Study 2), in which they were asked to imagine that a sales representative explained the product in a grocery store. Next, a four-cell between-subjects manipulation of information cue occurred. The no-cue scenario had no mention of the Internet. In the other conditions, the grocery store display showed the Sleep Sheets mobile website displayed on a smartphone, and the representative mentioned the product's website. The unspecified-cue scenario merely stated that the website had product information, as in Study 2's cue. In contrast, the same-info-cue scenario stated that the "very same" information they would learn next was also on the website, and the more-info-cue scenario stated that the website included the information that they would learn next as well as "much more" information. Participants were asked to paraphrase these instructions in an open-ended text box before proceeding, which enabled us to confirm that they understood the manipulations.

After reading the scenario, participants read six pages of product information. We manipulated the script between subjects to provide a low amount or a high amount of information. The high amount of information comprised the same script used in Study 2, but participants read the information rather than listening to an audio recording. The low amount of information was given in a briefer printed script that had similar content (e.g., ingredients and usage instructions) but differed in length and detail relative to the high amount of information (for scripts, see Appendix B; for pretest results, see Web Appendix C). After reading the script, participants rated their purchase intentions for Sleep Sheets on a three-item (α = .96), seven-point scale (1 = "not at all likely," "not at all inclined," and "not at all willing," and 7 = "very likely," "very inclined," and "very willing," for the three items, respectively).

Results

First, we analyze the effect of each cue under a high amount of information by comparing purchase intentions in each cue condition with the baseline, no-cue condition ($M_{no\ cue}$ = 3.89, SD = 1.90). Consistent with H_1, we found that purchase intentions were significantly higher in the unspecified-cue condition ($M_{unspecified}$ = 4.86, SD = 1.61;

t(243) = 4.38, $p < .05$). The same-info-cue condition also had higher purchase intentions compared with the no-cue condition ($M_{same\ info}$ = 4.48, SD = 2.03), but this effect was not significant (t(243) = 1.63, $p = .20$). The more-info-cue condition had directionally lower purchase intentions ($M_{more\ info}$ = 3.37, SD = 1.81), compared with the no-cue condition (t(243) = 1.28, $p = .26$). Consistent with H_2, purchase intentions in the unspecified-cue and same-info-cue conditions did not significantly differ from each other (t(243) < .6), but both these conditions had higher purchase intentions than the more-info-cue condition (both t(243) > 5.00, both $p < .05$; see Figure 2).

Second, we report contrasts by cue under a low amount of information. The four means were similar, although directionally, purchase intentions in the unspecified-cue ($M_{unspecified}$ = 3.76, SD = 2.04) and same-info-cue conditions ($M_{same\ info}$ = 3.23, SD = 1.92) were lower than those in the no-cue ($M_{no\ cue}$ = 4.14, SD = 2.01) and more-info-cue ($M_{more\ info}$ = 4.26, SD = 1.81) conditions. The only significant contrasts were in comparing the same-info-cue and more-info-cue conditions (t(243) = 4.30, $p < .05$) and in comparing the same-info-cue and no-cue conditions (t(243) = 3.77, $p = .05$).

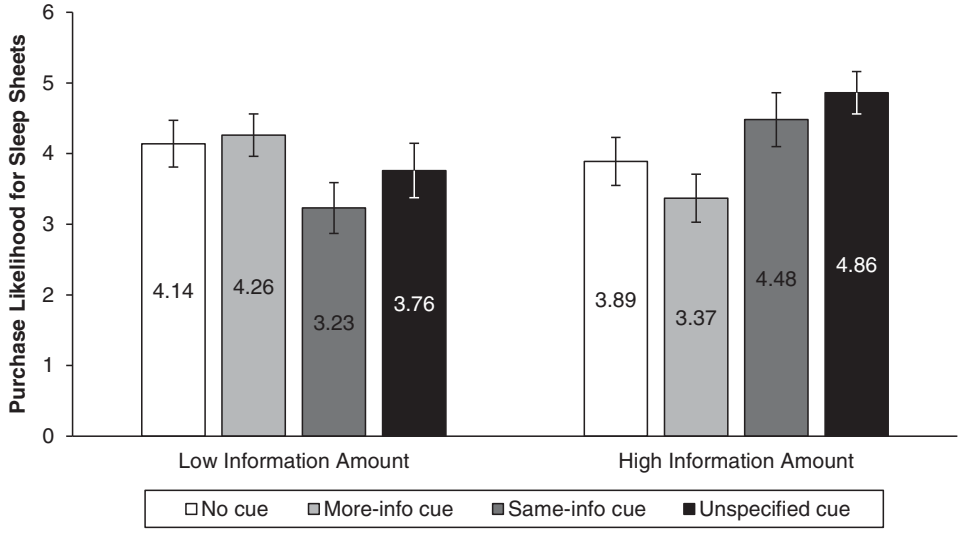
Finally, we report contrasts by amount of information (low vs. high) within each information-cue condition. This analysis illustrates how the effect of information amount on purchase intentions was moderated by the cue given and correspondingly reveals any similarities in the effect of each cue. As anticipated, purchase intentions were higher under a high (vs. low) amount of information in the unspecified-cue (M_{low} = 3.76 vs. M_{high} = 4.86) and same-info-cue (M_{low} = 3.23 vs. M_{high} = 4.48) conditions (both contrasts: t(243) > 4.78, $p < .05$). No significant effect of information amount emerged in the no-cue condition (M_{low} = 4.14 vs. M_{high} = 3.89; t(243) = .33, $p > .56$). However, in the more-info-cue condition, a marginally significant trend emerged: purchase intentions were lower with a high (vs. low) amount of information (M_{low} = 4.26 vs. M_{high} = 3.37; t(243) = 3.23, $p = .07$). In summary, these analyses show that an unspecified cue and a same-info cue similarly produce a positive effect of a higher amount of information on purchase intentions.

Discussion

Study 4 replicates our earlier results and clarifies what type of information is cued with a cue-of-the-cloud. We contend that an unspecified cue-of-the-cloud (e.g., just a URL for a product website) leads consumers to have a feeling of confidence in accessing the product information that they come across in the store. Consistent with this idea, we found that an unspecified cue and a same-info cue produced similar effects that differed from those of a more-info cue or no cue. Furthermore, the results suggest that in a high-information environment, mentioning more decision inputs online offers no benefit to and may even tend to hurt purchase intentions by further burdening consumers. Fortunately, the implication that more information can be learned online appears not to be the default focus when the cloud is cued.

Study 4's results also shed some light on the nature of our observed backfire effects in response to a cue-of-the-cloud. The findings are inconsistent with an account that the cue causes consumers to defer purchases in low-information environments until they have acquired the additional online product information. If this were the case, we would have seen particularly low purchase intentions among participants in the low-information/more-info-cue condition. What is notable, however, is that when participants were given a low amount of information in the environment, those who received the same-info cue demonstrated the backfire effect. It may be that those who currently have little information available and believe it comprises all the information available anywhere feel that it is inadequate to

Figure 2
PURCHASE INTENTIONS FOR SLEEP SHEETS IN STUDY 4



Notes: Error bars represent standard errors of the mean.

inform an appropriate decision. Consistent with this idea, in Study 4, when participants were told that more decision inputs were certainly available online, there was no backfire of the cue-of-the-cloud in the low-information environment. We discuss this backfire effect further in our general discussion.

GENERAL DISCUSSION

This work documents a novel and important way in which consumers' close relationship with the Internet affects brick-and-mortar purchase decisions. We find that in offline settings, a reminder that product information is online, a "cue-of-the-cloud," leads consumers to feel that responsibility for retaining and accessing burdensome product information has been delegated to the Internet. This instills confidence in their ability to access this information and increases their purchase intentions and choice behaviors. In our studies, offline information sources (e.g., printed brochures) also could be referenced to acquire product information, but we predicted and found that a cue-of-the-cloud activated a distinct effect relative to a cue to an offline information source.

We found evidence for effects of a cue-of-the-cloud across four studies, including two studies in real brick-and-mortar settings. Our studies also show under what conditions a cue-of-the-cloud has a positive (vs. negative or null) effect on purchase decisions. Consistent with our framework, we turn off the effect (and even see evidence of a trend toward a backfire effect) when the cue mentions the availability of *additional* online information (vs. the same information available in the store). Moreover, across studies, we show that the benefits of a cue-of-the-cloud are observed only when consumers are given a lot of (vs. relatively little) information during the purchase.

In fact, our research finds that in a low-information environment, a cue-of-the-cloud can also reduce purchase intentions. We suggest that one reason why this backfire effect may emerge is that the cue evokes an added responsibility of determining what (if any) unknown online information is currently absent and then accessing that information. We caution readers that this is only a preliminary explanation, because the focus of this research is on explaining the benefits of a cue-of-the-cloud on offline purchase decisions.

Managers might wish to introduce a cue-of-the-cloud in offline purchasing situations to strategically activate the beneficial effects on confidence and purchase intentions that we document. In doing so, they should be aware of the conditions in which a cue-of-the-cloud is most effective and the potential backfire effects that we also document in our work. Although a cue-of-the-cloud can put consumers at ease when they process product information, managers should also be aware that the cue may lead consumers to react more negatively to being given little product information in the store.

Theoretical Contributions

Our work advances the marketing literature in a number of ways. The cue-of-the-cloud effect that we document does not necessitate a consumer visiting a website; merely cuing the Internet in brick-and-mortar settings is sufficient to activate the effects. This idea is distinct from prior research that has focused on behaviors that take place online (e.g., e-commerce shopping; Alba et al. 1997; Schlosser, White, and Lloyd 2006). Our research demonstrates that reminders of the Internet serve as "primes"—a product website can affect consumer behavior even when it is not visited, so long as it is salient. In particular, our research accentuates the cognitive consequences of long-term Internet access, which have received scant attention in the marketing literature.

Our work also builds on and yet differs from related work on how the Internet acts as a transactive memory partner (Barr et al. 2015; Clowes 2015; Loh and Kanai 2015; Sparrow et al. 2011; Ward 2013a, 2013b). This prior work has found that people often offload memory retention and difficult thought to the Internet. We draw on these ideas to hypothesize and show that a cue-of-the-cloud triggers confidence concerning product information in stores. Yet, whereas past work has focused on how long-term Internet usage affects actual learning and depth of thought, our research documents the ensuing effects on purchase decisions.

Moreover, the current work extends research on the effects of information abundance on purchase decisions (Eppler and Mengis, 2004; Jacoby 1977, 1984; Jacoby et al. 1974; Malhotra 1982). This past work has shown that as information becomes more abundant, consumers may experience feelings of stress, confusion, pressure, anxiety, and low motivation (Eppler and Mengis 2004; Haksever and Fisher 1996; Lesca and Lesca 1995; O'Reilly 1980). Our findings are suggestive that these feelings might be overturned by a cue-of-the-cloud, which inspires a feeling that burdensome information is offloaded to the Internet. Thus, we identify a moderator of findings from the information abundance literature—one that is both timely and relevant for consumer behavior in the Internet age.

Directions for Future Research

Future work might seek to better understand the potential mechanisms by which the cue-of-the-cloud effect operates, through studies in which the proposed process is directly manipulated. Our framework suggests that directly manipulating confidence in information accessibility leads to positive consumer intentions and choices in high information environments. Conversely, eliminating the beneficial effects of a cue-of-the-cloud on purchase intentions may simply require a reduction in consumers' general confidence in information access during a purchase decision. For example, research has shown that irrelevant and unrelated sources of negative metacognitive feelings (e.g., a difficult-to-read font) can reduce decision makers' confidence (Schwarz 2004, 2006). We speculate that a cue-of-the-cloud does not enhance purchase intentions (vs. no cue) when it is counteracted with a manipulation of disfluency or conditions that limit feelings of ability to access information. Such a finding would offer additional evidence for our hypothesized mechanism and also provide practical insights.

Furthermore, future work might explore the process behind why a cue-of-the-cloud, under some conditions, can decrease purchase intentions. Our Study 4 suggests three situations in which a backfire effect can occur in response to a cue-of-the-cloud. In a low-information environment, a cue-of-the-cloud (vs. no cue) reduced purchase intentions when consumers were uncertain about what information was online ("unspecified" cue) and also when they were made

aware that the currently presented information comprised all the information available online ("same-info" cue). We also found a backfire effect in a high-information environment when consumers were told that that even more information was online. These findings suggest that a cue-of-the-cloud could arouse negative feelings like doubt and confusion as well as increased felt confidence in information access, depending on the situation.

Still other research might focus on how consumer characteristics moderate the effects of a cue-of-the-cloud on purchase decisions. Would experts and novices in a product category differ in how they interpret and react to a cue-of-the-cloud? We speculate that a cue-of-the-cloud might have a less pronounced effect on felt confidence in information access for experts (vs. novices), who are already high in confidence, but it might trigger other feelings or motivations for experts that would be worth uncovering.

Moreover, future work might explore other consequences of cuing the cloud in product purchase decisions. For example, apart from increasing confidence, a cue-of-the-cloud might elevate customers' attitudes toward a product, brand, or retailer when consumers are delighted to learn about the existence of a product website. This situation might occur in less developed countries, where not all reputable brands have websites. In more developed economies, a cue-of-the-cloud might affect consumers' motivations through other pathways. For example, the cue might have a negative effect on purchase intentions if it exacerbated "showrooming," wherein customers gather product information in a store setting but purchase online at a competing, low-cost e-retailer (Neslin et al. 2014). When customers come across reminders of the Internet in brick-and-mortar stores, they might think more about buying online, which would cannibalize in-store sales. Research should examine these and other questions by studying the cue-of-the-cloud effect in other countries and in other product categories in which these other effects may apply.

Cuing the cloud might also have implications for decisions outside of consumer purchases. For instance, political candidates commonly reference their websites during speeches on the campaign trail, and these candidates' URLs are plastered on bumper stickers and other marketing materials. During campaigns, candidates typically offer support for their policy positions by mentioning facts that voters must scrutinize. Could awareness that the same factual information is available from the candidate's website influence perceptions of the facts' veracity and diagnosticity? Perhaps voters would feel more confident in detailed facts posted on the Internet, because this information feels instantly accessible, and this could increase votes for a candidate who referenced online information. Alternatively, drawing attention to the Internet might arouse greater suspicion about a dearth of facts in a political speech because voters might feel an added responsibility of searching for unseen, online information.

Taken together, our research illustrates that the Internet is in many respects an unprecedented information source (Barr et al. 2015; Sparrow et al. 2011; Ward 2013a, 2013b), and constant access to the Internet has substantially altered the ways in which consumers think and behave. Yet more work is needed to uncover what makes the Internet distinct as an information source, compared with traditional offline sources, such as product packaging and in-store brochures. Our work has focused on the marked accessibility of online information, but further work might seek to uncover other symbolic associations of online information that could trigger novel effects on purchasing decisions. For example, in many product domains, relative to offline information, online information may be seen as more consumer-driven, less permanent, and more easily changeable; more inviting of distraction (Rosen and Carrier 2012); and containing fewer sensory modalities (e.g., no sense of smell or touch). In summary, an increasing reliance on the Internet will shape consumer behavior in countless ways, and an important direction for future research will surely be that that the existence of the Internet could change how consumers process and utilize information in online as well as offline purchase settings.

APPENDIX A: STIMULUS FOR STUDY 1 (WINE FESTIVAL)

The following information was presented to customers during the tasting:

- This 2013 Sauvignon Blanc is a light, fresh, aromatic wine with flavors of pineapple, guava, and lemon zest.
- It's a nice light pairing.
- It pairs well with grilled tilapia and asparagus.
- We might also suggest a pairing it with golden beets on a bed of arugula, dressed in a yogurt dill sauce, with hazelnut crust.
- The price of this wine is $16.95 a bottle.

Figure A1
SIGN AT THE WINE TASTING

Notes: The text in the center of the sign differed by condition. The sign shown here depicts the no-cue condition. The sign was sized at 8.5″ × 11″. In the cue-of-the-cloud condition, a tablet was nearby, displaying the winery's web page for the sauvignon blanc. In the cue-of-information-sheet condition, a stack of sauvignon blanc information sheets was nearby.

Appendix B

INFORMATION SCRIPTS FOR STUDIES 2 AND 4 (SLEEP SHEETS)

Item Number	*Low-Information Script*	*High-Information Script*
1	The main active ingredient in Sleep Sheets is melatonin, a hormone that aids sleep/wake cycles.	The main active ingredient in Sleep Sheets is melatonin, a hormone that our brains naturally produce. Melatonin plays a critical role in our sleep/wake cycles. Over the course of life, your body produces less and less melatonin, and this reduction in melatonin often causes sleep disorders.
2	Sleep Sheets' melatonin strips are perfect for promoting restful sleep for occasional sleeplessness.	Sleep Sheets' melatonin strips are perfect for the purpose of restoring optimal sleep patterns, correcting disturbances that are caused with air travel or "jet lags," or promoting restful sleep for occasional sleeplessness.
3	By simply placing a Sleep Sheets strip on your tongue, your body absorbs the active ingredients.	By simply placing a Sleep Sheets strip on your tongue, your body absorbs the active ingredients. The ingredients dissolve instantly. One Sleep Sheets strip contains 3 mg of melatonin, 3 mg of theanine, 1 mg of goji berry extract, and 1 mg of chamomile extract.
4	Sleep Sheets melatonin strips should be taken just before you go to sleep. Take Sleep Sheets when having sleep difficulty. Your body continues to naturally produce melatonin on its own on other nights.	Sleep Sheets melatonin strips should be taken before you go to sleep. It is recommended that you dissolve one strip fully around 20 minutes before lying down to sleep. You only need to consume 1 strip per sleep cycle. Consuming more than the recommended one strip per cycle provides no additional benefit. The product is less effective if you consume caffeine or alcohol close to bed time. Sleep Sheets can be used regularly, and your body will continue to naturally produce melatonin on its own. However, it is more economical to use Sleep Sheets on the occasional nights when you are experiencing sleeplessness.
5	You should not take Sleep Sheets if you are under 18 years old, are pregnant/lactating, or under medical supervision for depression.	You should not take Sleep Sheets if you are under medical supervision, have an autoimmune condition, have a depressive disorder, are pregnant/lactating, or are under 18 years old.
6	Sleep Sheets is made of all natural ingredients, and it is safe to use.	Sleep Sheets is a natural sleep aid, and it's safe to use. It contains ingredients that are all considered GRAS (Generally Recognized as Safe) by the FDA. Sleep Sheets are also gluten free for those who have gluten concerns, and they are made using peanut-free machinery.

REFERENCES

Alba, Joseph, John Lynch, Barton Weitz, Chris Janiszewski, Richard Lutz, Alan Sawyer, et al. (1997), "Interactive Home Shopping: Consumer, Retailer, and Manufacturer Incentives to Participate in Electronic Marketplaces," *Journal of Marketing*, 61 (July), 38–53.

Baldacchino, Kim, Colin Armistead, and David Parker (2002), "Information Overload: It's Time to Face the Problem," *Management Services*, 46 (4), 18–19.

Barr, Nathaniel, Gordon Pennycook, Jennifer A. Stolz, and Jonathan A. Fugelsang (2015), "The Brain in Your Pocket: Evidence That Smartphones Are Used to Supplant Thinking," *Computers in Human Behavior*, 48, 473–80.

Clowes, Robert (2015), "Thinking in the Cloud: The Cognitive Incorporation of Cloud-Based Technology," *Philosophy & Technology*, 28 (2), 261–96.

D'Alessandro, Steven and Anthony Pecotich (2013), "Evaluation of Wine by Expert and Novice Consumers in the Presence of Variations in Quality, Brand, and Country of Origin Cues," *Food Quality and Preference*, 28 (1), 287–303.

Dhar, Ravi (1997), "Context and Task Effects on Choice Deferral," *Marketing Letters*, 8 (1), 119–30.

Eppler, Martin J. and Jeanne Mengis (2004), "The Concept of Information Overload: A Review of Literature from Organization Science, Accounting, Marketing, MIS, and Related Disciplines," *Information Society*, 20 (5), 325–44.

Frederick, Shane, Nathan Novemsky, Jing Wang, Ravi Dhar, and Stephen Nowlis (2009), "Opportunity Cost Neglect," *Journal of Consumer Research*, 36 (December), 553–61.

Haksever, Mehmet A. and Norman Fisher (1996), "A Method of Measuring Information Overload in Construction Project Management," Proceedings of the CIB W89 Beijing International Conference, (October), 310–23.

Hayes, Andrew F. (2008), *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York: Guilford Press.

——— (2012), "A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling," (accessed July 1, 2014), [available at http://www.afhayes.com/public/process2012.pdf].

Jacoby, Jacob (1977), "Information Load and Decision Quality: Some Contested Issues," *Journal of Marketing Research*, 14 (November), 569–73.

——— (1984), "Perspectives on Information Overload," *Journal of Consumer Research*, 10 (4), 432–36.

———, Don E. Speller, and Carol K. Berning (1974), "Brand Choice Behavior as a Function of Information Load: Replication and Extension," *Journal of Consumer Research*, 1 (1), 33–43.

Kahneman, Daniel and Shane Frederick (2002), "Representativeness Revisited: Attribute Substitution in Intuitive Judgment," in *Heuristics and Biases: The Psychology of Intuitive Judgment*, T. Gilovich, D. Griffin and D. Kahneman, eds. New York: Cambridge University Press, 48–81.

Lesca, Humbert and Elisabeth Lesca (1995), *Gestion de l'information, qualité de l'information et performances de l'entreprise*. Paris: Litec.

Loh, Kep Kee and Ryota Kanai (2015), "How Has the Internet Reshaped Human Cognition?" *Neuroscientist*, forthcoming, [DOI: 10.1177/1073858415595005].

Malhotra, Naresh K. (1982), "Information Load and Consumer Decision Making," *Journal of Consumer Research*, 8 (4), 419–30.

Neslin, Scott A., Kinshuk Jerath, Anand Bodapati, Eric T. Bradlow, John Deighton, Sonja Gensler, et al. (2014), "The Interrelationships Between Brand and Channel Choice," *Marketing Letters*, 25 (3), 319–30.

Nielsen (2014), "Mobile Millennials: Over 85% of Generation Y Owns Smartphones," newswire, (September 5), [available at www.nielsen.com/us/en/insights/news/2014/mobile-millennials-over-85-percent-of-generation-y-owns-smartphones.html].

Novemsky, Nathan, Ravi Dhar, Norbert Schwarz, and Itamar Simonson (2007), "Preference Fluency in Choice," *Journal of Marketing Research*, 44 (August), 347–56.

O'Reilly, Charles A. (1980), "Individuals and Information Overload in Organizations: Is More Necessarily Better?" *Academy of Management Journal*, 23 (4), 684–96.

Rosen, Larry D. and Mark L. Carrier (2012), *iDisorder: Understanding Our Obsession with Technology and Overcoming Its Hold on Us*. New York: Macmillan.

Schlosser, Ann E., Tiffany B. White, and Susan M. Lloyd (2006), "Converting Web Site Visitors into Buyers: How Web Site Investment Increases Consumer Trusting Beliefs and Online Purchase Intentions," *Journal of Marketing*, 70 (April), 133–48.

Schwarz, Norbert (2004), "Metacognitive Experiences in Consumer Judgment and Decision Making," *Journal of Consumer Psychology*, 14 (4), 332–48.

——— (2006), "Feelings, Fit, and Funny Effects: A Situated Cognition Perspective," *Journal of Marketing Research*, 43 (February), 20–23.

Settle, Robert B. (1972), "Attribution Theory and Acceptance of Information," *Journal of Marketing Research*, 14 (February), 85–88.

Simmons, Joseph P. and Leif D. Nelson (2006), "Intuitive Confidence: Choosing Between Intuitive and Nonintuitive Alternatives," *Journal of Experimental Psychology: General*, 135 (3), 409–28.

Slovic, Paul (1972), "From Shakespeare to Simon: Speculations—and Some Evidence—About Man's Ability to Process Information," *Oregon Research Institute Research Monograph*, 12, 10–23.

Sparrow, Betsy, Jenny Liu, and Daniel M. Wegner (2011), "Google Effects on Memory: Cognitive Consequences of Having Information at Our Fingertips," *Science*, 333 (6043), 776–78.

U.S. Census Bureau (2016), "Quarterly Retail E-Commerce Sales: 4th Quarter 2015," press release (February 17), [available at http://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf].

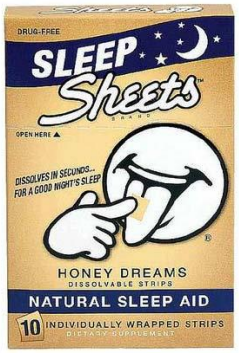
Ward, Adrian F. (2013a), "One with the Cloud: Why People Mistake the Internet's Knowledge for Their Own," doctoral dissertation, Harvard University.

——— (2013b), "Supernormal: How the Internet Is Changing Our Memories and Our Minds," *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory*, 24 (4), 341–48.

Westbrook, Robert A. and Claes Fornell (1979), "Patterns of Information Source Usage Among Durable Goods Buyers," *Journal of Marketing Research*, 16 (August), 303–12.

Zhao, Xinshu, John G. Lynch, and Qimei Chen (2010), "Reconsidering Baron and Kenny: Myths and Truths About Mediation Analysis," *Journal of Consumer Research*, 37 (2), 197–206.

WEB APPENDIX A: SLEEP SHEETS' STIMULI FOR STUDIES 2 AND 4

Box of product (seen by all participants during product introduction)	Product's mobile Internet page (seen only when the cloud was cued prior to information script)
	

WEB APPENDIX B: STIMULUS FOR STUDY 3 (WINERY)

High-detail script on the Rosso Cabernet Merlot presented at the winery:

- *This is our signature blend of 52% Cabernet Sauvignon, 32% Merlot, and 16% Cabernet Franc.*
- *You'll get hints of sweet plum, black cherry, and blackberry.*
- *You might also be able to pick up the tannic cedar.*
- *"Rosso" means simply red in Italian, and so this is a great smooth everyday red.*
- *Think of pasta with red sauce, or barbequed sausages.*
- *This is an easy pairing and easy drinking wine, because it's a medium bodied red with smooth tannins.*

Pre-test respondents (N = 60 from mTurk) read a scenario that described the winery purchasing situation. They imagined speaking with a winery representative and sampling the Rosso. Half of the respondents read the script with a high amount of information, and the other half received no further information, in a between-subjects manipulation. Respondents rated the information as more abundant under high-information-amount, with ratings on a 7-point scale ($M_{\text{High-amount}} = 5.63$ vs. $M_{\text{Low-amount}} = 3.70$; $t(58) = 5.58$; $p < .0001$).

Image on index card survey that customers returned for a $2 voucher:

No-Cue Condition	Cue-of-the-cloud Condition
Visit us at our winery in any season! 	**Visit us on the web, where you can always access information about our wine!** 

WEB APPENDIX C:

PRE-TEST FOR SLEEP SHEETS

We pre-tested the scripts with a high versus low amount of information presented in studies 2 and 4. Pre-test respondents (N = 59 mTurk workers) read either the script with the high or the low amount of information in a between-subjects manipulation. They rated each of the six pages of product information on detail and positivity on 7-point scales. According to pre-test results, the script with a high (vs. low) amount of information was perceived to be more detailed ($M_{High-amount}$ = 5.72 vs. $M_{Low-amount}$ = 5.17; t(57) = 2.46, $p < .05$) but equally positive ($M_{High-amount}$ = 5.42 vs. $M_{Low-amount}$ = 5.36; t(57) < .5).