Addressing Online Users' Suspicion of Sponsored Search Results: Effects of Informational Cues

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ABSTRACT

Sponsored search results (SSRs) that deviate from users' search queries often raise suspicion despite receiving positive evaluations from previous users. Such a suspicion typically prompts users to avoid SSRs. To address this issue, our study focuses on the role of online informational cues, such as product reviews and ratings from user-generated content, in reducing users' suspicion when encountering these SSRs. Drawing on the theoretical perspective of state suspicion, we contextualize the dimensions of suspicion in the SSR context, including *decision uncertainty*, *perceived malintent of the search platform*, and *processing of an SSR*. We propose theory-based strategies for reducing the suspicion of users by incorporating informational cues about an SSR in the product search process in e-commerce contexts. Specifically, we theorize that the internalization of an informational cue can reduce users' decision uncertainty and/or their perceived malintent of the platform, which will increase their processing of an SSR. Our approach also considers contingent factors that trigger users' internalization. We conducted three laboratory experiments, and the results support our theorization. Our study uncovers the internalization mechanism of informational cues in addressing the suspicion of users in online information search contexts and offers practical implications to e-commerce platforms to facilitate users' decision-making processes.

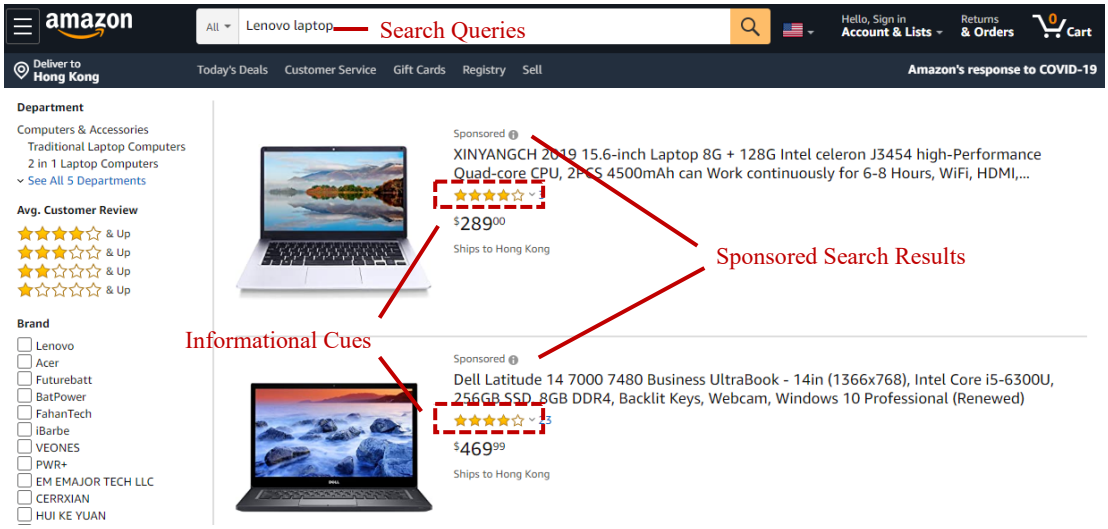
Keywords: online user suspicion, sponsored search, user avoidance, informational cues, laboratory experiment

1. INTRODUCTION

Users can easily become suspicious of the search results when searching for information in an online environment owing to the environment's lack of regulation compared with its offline counterpart (e.g., Liu and Goodhue 2012; Yi et al. 2019). Meanwhile, others may blindly trust and fall prey to online misinformation, such as fake news (Turel and Osatuyi 2021). Recent research has focused on misinformation diffusion in the online environment (Lee et al. 2022; Moravec et al. 2020). However, few

studies have examined users' state suspicion, especially when they receive "legitimate" information, which is a critical practical issue in e-commerce.[1] Specifically, users are generally suspicious of and respond negatively to sponsored search results (SSRs) (e.g., simply ignoring SSRs) that deviate from their search queries when they search for products and information on e-commerce platforms (see Figure 1 for a typical example of SSRs on Amazon.com) (e.g., Animesh et al. 2011; Im et al. 2019). Many SSRs are legitimate because they provide good recommendations and can raise users' awareness of alternatives (Deng et al. 2022). Promotions through sponsored search are indispensable to firms' brand marketing (De Jans et al. 2020). Furthermore, sponsorships are the primary revenue resource of search platforms, making them crucial to platforms' sustainability and online search services (PwC 2022). However, users' suspicion about SSRs jeopardizes the pay-per-click business model because ignoring SSRs leads to a low click-through rate. Current research insufficiently addresses user suspicion in the context of receiving legitimate information during the online search process. Our study addresses this void by examining users' suspicion when they shop online using e-commerce platforms.

Figure 1. SSR on Amazon.com



Previous studies have explored individuals' suspicion in various offline contexts, such as

[1] This study focuses on "state suspicion" triggered by situational factors (e.g., a sponsored search result). State suspicion differs from trait/dispositional suspicion in that the latter considers suspicion as a stable personal trait (e.g., Hilton et al. 1993). For brevity, the term "suspicion" in our study refers to "state suspicion."

negotiations (Sinaceur 2010) and commercial interactions (DeCarlo 2005). In these offline contexts, individuals intend to process and cope with the focal situation in suspicion by spending additional effort in processing relevant information (e.g., Kim et al. 2004). For example, a consumer usually spends additional effort processing and verifying a persuasive message from a salesperson in suspicion (Campbell and Kirmani 2008). As such, changes in individuals' processing of the target is often considered a major dimension of suspicion and increased processing is essential to the triggered suspicion in offline contexts. In this study, we focus on the context of online information search, in which users' suspicion is often triggered by a search result that deviates from their search queries (e.g., an SSR; see Figure 1 for an example). Suspicious users tend to ignore and avoid the targets in suspicion, rather than process them (i.e., SSRs), which distinguishes online search contexts from those in previous studies. Therefore, when contextualizing suspicion in online information search, a further conceptualization of suspicion in the current context is warranted.

Extant studies on the conceptualization of suspicion have revealed the multi-dimensional nature of suspicion. In addition to changing the individuals' processing of the target, suspicion is associated with their uncertainty about their evaluations and decisions (i.e., decision uncertainty) and their questioning of an actor's motives (i.e., perceived malintent) (e.g., Bobko et al. 2014a). These studies, which were conducted in offline contexts, assume that these dimensions occur simultaneously, and have not examined their inter-relationships. Given that whether to increase their processing of an SSR is under users' discretion (i.e., SSRs are only "supplementary" to the organic search results, users can choose to process or bypass the focal SSR), we need to understand whether processing of an SSR is affected by decision uncertainty and perceived malintent of the search platform. To address users' suspicion in the SSR context, we need to develop a nuanced understanding of suspicion, including the inter-relationships among its dimensions. Therefore, our first objective is to contextualize users' state suspicion within our research context and examine the inter-relationships among its dimensions.

Once we gain a clear understanding of the inter-relationships among the dimensions of users' suspicion, we aim to develop specific ways to address user suspicion. We propose that positive

informational cues from user-generated content (UGC), such as previous buyers' quality ratings of an SSR, can address users' suspicion. As UGC is widely available online, many platforms present UGC as informational cues to facilitate users' online choice decisions. Previous research suggests that informational cues constitute persuasive commercial messages to facilitate users' decision-making and help them select suitable products (e.g., Yi et al. 2019) (please see Table A1 in Appendix A for a review). Intuitively, positive UGC about an SSR has the potential to address users' suspicion. However, previous studies indicate that individuals in a state of suspicion may become defensive toward persuasive commercial messages and perceive them to be misleading (Ford et al. 1990). Thus, the effects of informational cues from UGC are not guaranteed when they are provided for SSRs. Nevertheless, few studies have investigated whether and how informational cues can address user suspicion. Therefore, our second objective is to develop strategies for addressing user suspicion effectively.

The persuasion literature suggests that users can change their evaluation of a target upon receiving an informational cue, which is a process referred to as the *internalization* of the cue (Deng et al. 2022; Kelman 1961). We theorize that informational cues can address users' suspicion through this internalization process. Although internalization may occur easily when users are not suspicious, such as when they encounter organic search results (Amiot et al. 2012), suspicious users are typically wary of persuasive messages. Therefore, they may not always be motivated to internalize informational cues about an SSR and process the SSR. In this study, we delineate whether and under what conditions informational cues can be internalized to address users' suspicion during the search process.

We propose that the internalization of informational cues by suspicious users is contingent upon situational factors that "encourage" the internalization. In our context, users anticipate receiving organic results that align with their search queries. Consequently, the provision of an SSR that deviates from the users' search queries will raise suspicion (Animesh et al. 2010). We posit that clues about the credibility of an SSR will influence users' decision to internalize an informational cue. For example, SSRs featuring a popular brand (a clue signalling a high level of credibility of the SSRs) are often deemed as a reliable pool of product alternatives, because many other users have chosen the products. In this situation, we contend

that the internalization of an informational cue can increase users' intent to process an SSR by reducing their decision uncertainty. By contrast, we argue that if an SSR lacks sufficient credibility (e.g., an SSR with an unknown brand), then additional evidence is needed to indicate whether the SSR is highly reliable. Only then can users' effort in internalizing the informational cues and the related SSR be deemed worthwhile. Accordingly, we propose that users' decision uncertainty and perceived malintent of the search platform can be reduced by internalizing the cue, which will then increase their processing of the SSR. Examining these scenarios allows us to reveal when and how informational cues can address user suspicion.

We collect data through a series of laboratory experiments simulating a C2C e-commerce setting where SSRs and informational cues are widely accessible to users. This study makes two major contributions. First, we advance the theory of suspicion in an information search context where users encounter SSRs that trigger their state suspicion. Particularly, we contextualize the dimensions of state suspicion in our SSR context and theorize the inter-relationship among these dimensions, which is largely neglected in extant research. Second, we open the black box of the effects of informational cues on user suspicion in an SSR context by applying the internalization perspective. We advance the literature on suspicion by theorizing the effects of informational cues on addressing user suspicion and identifying situational factors as the boundary conditions of such effects.

The remainder of this paper proceeds as follows. Section 2 reviews our theoretical background. Section 3 develops the hypotheses. Section 4 introduces the three experiments and reports their results. Section 5 discusses the findings of the experiments and their implications for research and practice.

2. CONTEXTUALIZATION OF STATE SUSPICION

Extant literature suggests that individuals' state suspicion contains three dimensions: (a) decision uncertainty, (b) perceived malintent, and (c) increased processing of the target in doubt (Bobko et al. 2014a). In (e-)commerce, *decision uncertainty* arises when a user has difficulty in accurately evaluating an entity (Dimoka et al. 2012). In our context, users under the state of suspicion lack the confidence to accurately evaluate the search results (e.g., whether the sponsored product is of good quality or not) (Geng et al. 2009).

Perceived malintent refers to individuals' perception of the ulterior motives of an actor's behavior to mislead them (Bobko et al. 2014a; Kirmani and Zhu 2007). Previous studies on suspicion in marketing and information systems (IS) fields have focused primarily on this dimension (e.g., Campbell and Kirmani 2008; Salovaara et al. 2019). In our study, users' perceived malintent refers to their belief that a platform provides information with the intention to mislead the users, such as promoting a low-quality sponsored product (Kirmani and Rao 2000).

Increased processing involves individuals' generation and confirmation/disconfirmation of possible explanations for the behaviors of the target in suspicion, which includes cognitive, affective, and behavioral aspects (Bobko et al. 2014b). Previous studies have concentrated primarily on the cognitive aspect of processing of a target (e.g., Main et al. 2007). Recent research suggests that processing of the target also includes affective and behavioral aspects (Bond 2012). For instance, when an employer is suspicious of an employee's reimbursement claim with an exorbitant amount of travel expenses, the employer will pay attention to and generate potential reasons to explain the claim (i.e., cognitive aspect), such as whether the employee chose luxury rooms intentionally or because standard rooms were unavailable; the employer may further ask the employee additional questions to confirm/disconfirm his/her thoughts (i.e., behavioral aspect) (Hess and Cottrell 2016). Our research adopts this recent typology of processing of a target and contends that suspicious users' processing of an SSR involves cognitive (e.g., paying attention to the SSR), affective (e.g., liking the SSR), and behavioral (e.g., clicking on the SSR) aspects.

Our contextualization of processing of an SSR considers our specific research context of online information search. The extant literature on suspicion in offline contexts contends that (1) individuals increase their processing when their suspicion is increased, and thus (2) increased processing is often considered negatively-oriented (Levine and McCornack 1991). These two arguments are inapplicable when conceptualizing suspicion in our context for the following reasons. First, increased processing of SSRs corresponds to users' reduction of suspicion in our context. Previous literature primarily concentrates on scenarios where individuals are evaluating a target in suspicion and would not simply ignore/avoid this target (e.g., Main et al. 2007). However, SSRs are supplementary to the organic search results, and users

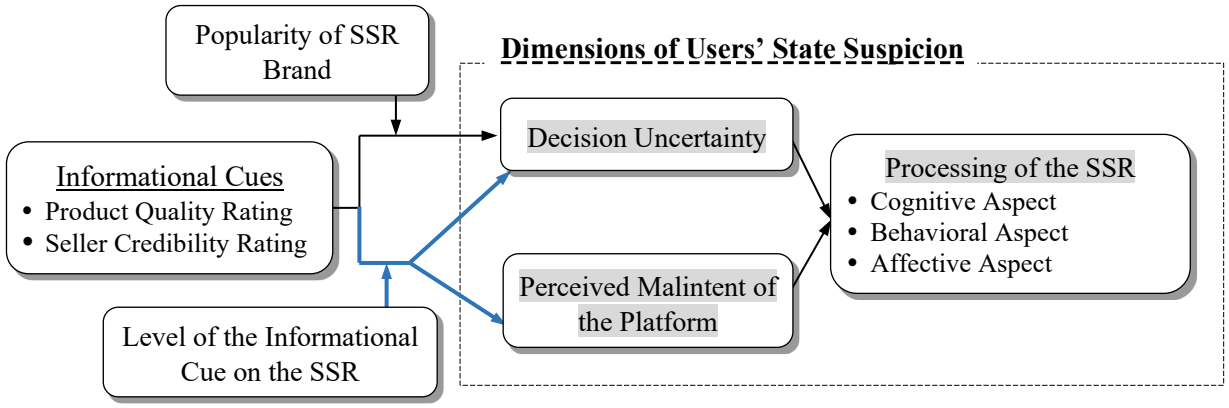
can choose to process or bypass the focal SSR. The purpose of addressing users' suspicion is to persuade these users not to avoid the SSR (i.e., increasing their processing of the SSR) in our study context. Second, consistent with recent studies on suspicion, we contend that processing of a target in suspicion is not necessarily negatively-oriented (Roth et al. forthcoming).[2] We focus on SSRs that are highly rated by others. The increased processing of an SSR that receives positive ratings from prior consumers can be beneficial to users (i.e., positively-oriented). As a result, this dimension of suspicion is different from the other two negatively-oriented dimensions (i.e., decision uncertainty and perceived malintent). We do not assume the simultaneous occurrence of the three dimensions of suspicion in our SSR context; instead, we examine the inter-relationships among these dimensions.

3. HYPOTHESIS DEVELOPMENT

Figure 2 depicts our overall research framework. In the following subsections, we first investigate the inter-relationships among the dimensions of suspicion (Section 3.1). Specifically, we contend that decision uncertainty and perceived malintent of the platform will affect the third dimension of suspicion: users' processing of an SSR. Accordingly, we examine two possible routes for the effects of an informational cue on suspicion: by reducing users' decision uncertainty (Section 3.2) and by reducing their perceived malintent of the platform (Section 3.3), which are expected to lead to their increased processing of an SSR.

Figure 2. Overall Research Framework

[2] Recent researchers have discussed the negative aspects of the suspicion dimensions. Nevertheless, they focus only on decision uncertainty and perceived malintent, but not the increased processing dimension. For instance, researchers point out that "*Suspicion allows researchers to capture negative dynamics such as uncertainty and malintent*" (Roth et al. forthcoming, p. 11) and "*the suspicion-based components of malintent and uncertainty could be related to expected negative effects*" (Roth et al. forthcoming, p. 19).



Condition for the blue path: when the SSR brand is ***unknown***

3.1 Inter-relationships among Dimensions of Suspicion in the SSR Context

The three dimensions of suspicion concern multiple stakeholders/targets in an SSR context, and understanding the targets helps us articulate the inter-relationships among these dimensions. For example, in Figure 1, suspicious users' evaluations of an SSR involve three key entities: the sponsored product (i.e., the XINYANGCH laptop), the seller of the product (i.e., the XINYANGCH store), and the e-commerce platform that presents the SSR to the users (i.e., Amazon.com). First, in line with previous research, decision uncertainty during the information search process in our study arise from evaluating the search results (i.e., the targets of search results including the sponsored product and/or the seller) (e.g., Venkatesh et al. 2016). Users are uncertain about the sponsored product's quality (whether or not the product is well crafted and/or durable) and/or the seller's credibility (whether the seller is trustworthy to transact with) when evaluating an SSR (Animesh et al. 2010). For instance, they may believe that the SSR is presented at the top of the search results page, because the seller pay sponsorship to the platform to promote inferior products (Deng et al. 2022). Second, the target of perceived malintent during the product-search process is the search platform that presents the SSR and informational cues to the users. Suspicious users may question the platform's motives for providing the SSR (i.e., malintent). Third, the target of processing is the SSR. Users' increased processing of an SSR means that they attend to the SSR with an improved affect and possibly click on it to further evaluate it. While the three suspicion dimensions concern more than one target (e.g., an SSR and a platform), we contend that inter-relationships among these dimensions exist because the SSR

is provided by the platform. For instance, users' evaluations of the platform can spill-over to the SSR it provides.

We uncover the following two inter-relationships among dimensions of suspicion. First, we predict that reducing users' decision uncertainty can increase their processing of an SSR. According to the perspective of "humans as cognitive misers," decision uncertainty influences consumers' attention allocation (Feldman and Lynch 1988; Liu and Goodhue 2012). This perspective suggests that users tend to reduce the cognitive complexity and save effort in evaluating and choosing products, especially when faced with many alternatives in the search results. Users often filter out the search results with high uncertainty (e.g., by ignoring and not clicking on SSRs) and focus on other alternatives (e.g., organic results), because the former may result in wasted effort (Hardisty and Pfeffer 2017). We reason that to induce users' additional processing of an SSR, their decision uncertainty needs to be reduced to ensure that the extra effort they spent (e.g., paying attention to and clicking on SSRs) would not be wasted (Liu and Goodhue 2012). In addition, the latest literature points out that "*uncertainty can be associated with increased tension and non-positive emotions*" (Roth et al. forthcoming, p. 11). As such, reducing uncertainty can also increase users' likeness of the SSR (i.e., the affective aspect of processing).

Second, users' perceived malintent of the platform can also affect their likelihood of processing an SSR. Users expect the search results to match their search queries; however, SSRs that deviate from users' search queries are often presented on top of the organic results by the platform (Animesh et al. 2010). The deviation of the SSR from users' expectations raises their concerns about the underlying algorithm and motive of the platform in generating and presenting the search results (Long et al. 2022). Again, according to the perspective of "users as cognitive misers," users may not expend cognitive effort or take action to process the SSR but focus only on the organic results. However, users favor the recommendations provided by entities with altruistic intentions, because following such recommendations can help them select a suitable product (Elliott et al. 2015). Therefore, we argue that reducing users' perceived malintent of the platform can increase their processing of an SSR.

3.2 Addressing User Suspicion: Informational Cues and Internalization

Previous studies from IS and organizational behaviour (OB) fields have investigated the effects of informational cues on people's decision making. These studies suggest that informational cues in the marketplaces or workplaces can influence individuals' decision uncertainty and perceptions about the sellers/employers (e.g., Deng et al. 2022; Roth et al. forthcoming) (please see Table A1 in Appendix A for a review). Although these studies focus on scenarios where individuals' suspicion is not necessarily activated, we extend the logic of the effectiveness of informational cues to the SSR context. Specifically, we contend that informational cues can influence suspicion by two possible routes, considering the inter-relationships among the dimensions of suspicion: by reducing users' decision uncertainty and by reducing users' perceived malintent of the platform. In this and the succeeding sections, we investigate the effects of positive informational cues on suspicion via these two routes. Then, we examine the contingent factors of the effects of the cues and elaborate on the boundary of the effects.

This study focuses on two specific types of positive informational cues: product-quality rating cues and seller-credibility rating cues. Our focus on these two types aligns with recent studies that highlight the importance of product quality and seller credibility in consumers' evaluations in e-commerce (e.g., Isaac and Grayson 2017). In our context, sponsored products and sellers are the primary targets of users' evaluation when encountering an SSR. Positive product-quality rating cues pertain to high evaluations of a sponsored product's quality, such as its craftsmanship (Li and Hitt 2010), and positive seller-credibility rating cues reflect high trustworthiness of the seller for making transactions (Sundar et al. 2009).[3]

We contend that informational cues can affect users' decision-making and evaluations of an SSR via an *internalization* process (Deng et al. 2022; Kelman 1961). A cue of product quality rating (e.g., 4.9/5.0) indicate the quality of the product in an SSR, and internalizing this cue helps the users judge the quality of the sponsored product. Thus, the users' internalization of a positive informational cue can reduce their

[3] Many e-commerce platforms, such as Amazon and eBay, present one type of informational cues on their search results pages. In addition, theoretically, we do not expect to observe interaction effects between different types of cues. Thus, we investigate the effect of either a product quality rating or a seller credibility rating shown alongside an SSR.

decision uncertainty related to the SSR.

However, the activation of the routes to influence user suspicion through informational cues may not always occur, because it requires users to expend cognitive effort to process the cue via an internalization process. As cognitive-misers, users are unwilling to waste their cognitive efforts in absorbing "useless" information. Therefore, we need to examine the situational factors that can ensure that users' cognitive resources spent on internalizing informational cues are not wasted. Drawing upon the persuasion literature (e.g., Campbell and Kirmani 2008), we consider SSR credibility as a contingent factor that can ascertain whether users would internalize an informational cue about an SSR. When an SSR has a certain level of credibility (e.g., an SSR with a popular brand), the platform's malintent in providing the SSR is not a major concern in users' minds, and users will be more likely to put effort into internalizing the informational cue and processing the SSR. Given that whether informational cues affect user suspicion is contingent upon the level of the SSR credibility, we do not hypothesize the main effect of informational cues on user suspicion but develop our hypotheses based on the specific situations described in the following subsections.

3.3 Addressing User Suspicion: Moderating Role of the Popularity of an SSR Brand

In this study, we use *popularity of the SSR brand* (popular vs. unknown brand) as an indicator of the SSR's credibility. Previous research has consistently shown that consumers perceive a source to be credible when the entity tries to persuade consumers to purchase a product with a popular brand (a brand that is well-known and widely-accepted) (Chaiken and Maheswaran 1994). Conversely, when users receive recommendations about products with an unknown brand, they may not have confidence in following such recommendations (Xiao and Benbasat 2011). Therefore, we examine the popularity of the SSR brand as the first contingent factor for the effects of informational cues on user suspicion.

We posit that when an SSR has a popular brand, a positive informational cue will increase users' processing of the SSR via the route of reducing decision uncertainty. An SSR with a popular brand indicates that many other users have purchased and consumed the sponsored product, which stimulates users' interest in learning how prior users have evaluated the SSR via "digesting" the informational cue (i.e., internalization of the cue) (Lei et al. 2021). With a high product-quality rating cue (or a high seller-

credibility rating cue), users will become certain about the high quality of the sponsored product (or the high credibility of the seller). As a result, users will be willing to increase their processing of the SSR (e.g., they will likely attend to, like, and click on the SSR). In short, the provision of a positive informational cue for an SSR with a popular brand will lead to users' increased processing of the SSR via the reduced decision uncertainty about the SSR.

> *H1: A positive informational cue alongside an SSR influences user suspicion when the SSR has a popular brand. In particular, the cue reduces user decision uncertainty, which in turn increases users' processing of the SSR.*

While informational cues can reduce decision uncertainty when the SSR brand is popular, we argue that the cues will not impact users' perceived malintent of the platform. This is because users are generally not concerned about the platform's malintent when they receive an SSR with a popular brand. As users tend to conserve their cognitive resources, they are unlikely to expend cognitive effort re-evaluating the platform's malintent by processing informational cues about the SSR. As such, we do not posit the effect of a positive informational cue on users' suspicion via the route of perceived malintent of the platform.

By contrast, when an SSR displays an unknown brand (i.e., the SSR brand is not popular), we predict that informational cues are ineffective in reducing either decision uncertainty or perceived malintent. Users will be apprehensive about the platform's intent in providing informational cues alongside SSRs with an unknown brand and will question the appropriateness of the platform in doing so. They will no longer perceive the platform as aiding their product choices and will discount the positive information conveyed in the cues, making it unlikely that they will reassess their perception of the sponsored products or sellers via processing the informational cues (hence, no internalization occurs). That is, an informational cue alongside an SSR with an unknown brand will not affect user suspicion. Thus, we do not posit the effects of information cues on users' suspicion when the SSR has an unknown brand.

3.4 Addressing User Suspicion when the SSR Brand is Unknown

Given that merely presenting an informational cue alongside an SSR with an unknown brand cannot address user suspicion, we postulate that additional evidence regarding the appropriateness of presenting an SSR is necessary to trigger the internalization of the informational cue. E-commerce platforms (e.g., Amazon and

Taobao) commonly present informational cues alongside SSRs and organic search results (Yu and Marakas 2019). Studies in the psychology and marketing fields have suggested that informational cues can effectively assist users in evaluating a target in doubt when the cues are comparable to those for other trusted targets (Currim and Sarin 1984). In the case of presenting informational cues for an SSR and organic results, users can compare the rating of the SSR with those of the nearby organic results. We argue that the results of such a rating comparison (e.g., users find that the SSR is as good as or worse than top organic results) may influence user suspicion. Therefore, we study the rating level of informational cues alongside the SSR as the second contingent factor for the effects of informational cues on suspicion.

We first examine the scenario where the rating of the focal SSR is at a relatively high level (i.e., similar to those of the first few top organic results). Users often deem the top organic results to be highly credible (Dou et al. 2010). If the product/seller rating of an SSR is as high as that of organic results, then users will perceive the platform to be offering the SSR as a good potential candidate. This perception improves the users' view of the motive of the platform in presenting the cues alongside the SSR, thereby reducing perceived malintent of the platform. Meanwhile, users initially lack confidence in their evaluation when faced with an SSR with an unpopular/unknown brand (Erdem and Swait 2004). By recognizing that the product quality of the SSR is similar to that of the top organic results, users will be confident in the quality of the SSR; thus, their decision uncertainty will be reduced. Consequently, users will increase their processing of the SSR. In summary, the informational cue can activate both routes (i.e., reducing perceived malintent and decision uncertainty) to increase the processing of the SSR.

> *H2: For an SSR with an unknown brand, when both the SSR and organic results include informational cues, the informational cue with a high-level rating comparable to those of top organic results on the first search result page influences user suspicion. In particular, the cue reduces users' decision uncertainty and perceived malintent of the platform, which in turn increases their processing of the SSR.*

By contrast, an informational cue alongside the SSR with a relatively low level (e.g., similar to the ratings of organic results at the bottom of the first search result page) will not likely reduce user decision uncertainty or perceived malintent of the platform. When users compare the rating of the SSR with that of

the top organic results, they will notice that prior buyers' evaluations of the SSR are lower than those of the top organic results, which confirms their negative bias towards the platform's motive in presenting the SSR. Consequently, users are unlikely to internalize the informational cue alongside the SSR. With many other satisfactory organic results available, users will likely ignore the SSR and focus on the organic results. Thus, we contend that an informational cue alongside an SSR with a relatively low rating becomes ineffective in reducing users' suspicion and do not posit the effect of such a cue on suspicion.

For an SSR with a popular brand, the effects of an informational cue as posited in H1 will hold, regardless of the level of the cue, when both the SSR and the organic results have informational cues. When the informational cue alongside the SSR is not as high as that of the top organic results, the cue is still positive. Users will learn that many other users have purchased the product and rate it positively, thereby reducing their decision uncertainty. As a result, the informational cue reduce suspicion regardless of the rating level of the cue alongside the SSR. Therefore, we do not hypothesize the contingency of the rating level when the SSR brand is popular and both the SSRs and organic results have informational cues.

4. METHODOLOGY AND RESULTS

We conducted three laboratory experiments to test our hypotheses. Experiment 1 focused on the effects of informational cues on suspicion (H1) under the scenario where the SSR brand is popular. We also empirically examined our theoretical arguments related to internalization (i.e., informational cues increase users' perceived quality of the sponsored product or perceived credibility of the seller). Experiment 2 examined the role of the popularity of the SSR brand for the effects of informational cues and tested the mediating role of decision uncertainty (H1). This experiment covered two scenarios: one for a popular SSR brand and the other for an unknown SSR brand. Experiment 3 focused on the scenario where the SSR brand is unknown and both the SSR and organic results are presented with informational cues. We manipulated the rating level of the informational cue alongside the SSR and examined the mediating role of decision uncertainty and perceived malintent of the platform (H2).

4.1 Experiment 1

Experiment 1 employed a between-subject design (informational cue: no cue vs. a product quality rating cue [Q-cue hereafter] vs. a seller credibility rating cue [C-cue hereafter]). Each group consisted of 30 participants. We determined the sample size through a statistical power calculation, using a medium effect size (f = 0.25), a significance level of p = 0.05, and a power of 80% (Cohen 1988).[4] For experimental purposes, we instructed the participants to perform an experimental search task on a website that simulated Taobao.com, which is currently the largest C2C website in China and one of the most popular C2C websites globally.

The experiment was conducted in a laboratory at a university in Hong Kong. All the participants had at least four years of Internet user experience and had made a minimum of three purchases on Taobao.com in the past 12 months. Upon arrival at the laboratory, the participants were briefly oriented on the experiment. The experimental task was to search for a headset for personal use.[5] We simulated a C2C e-commerce platform and presented a manipulated search results page to the participants.

To evaluate participants' suspicion in the experimental task, we assessed its three dimensions: (1) decision uncertainty through self-reported measures, (2) perceived malintent of the platform through self-reported measures, and (3) users' avoidance of SSR as an operationalization of increased processing of the SSR (albeit in a reversed manner) through a mixed-method approach. SSR avoidance was conceptualized as users' cognitive, behavioral, and affective responses to prevent the acquisition of an SSR (Cho and Cheon 2004; Deng et al. 2022). High SSR avoidance reflects users' unwillingness to process an SSR. Cognitive avoidance occurs when users intentionally avert their attention from the SSR, despite having noticed its existence (measured by self-reported items and eye-tracking in the experiments) (Golman et al. 2017). Affective avoidance is generally associated with users' overall negative/unpleasant feelings toward the SSR

[4] For the F-test family (e.g., the ANCOVAs in our study), Cohen (1988, p. 25) defines f = 0.25 as an indicator of medium size and suggests that a medium effect size "*represents an effect likely to be visible to the naked eye of a careful observer*." In estimating sample sizes for experimental designs in IS and marketing studies, a medium effect size is commonly applied (e.g., Yi et al. 2017).
[5] To ensure the appropriateness of the search task, we conducted a pre-test. Results indicated that the participants were generally familiar with headsets (M = 5.33/7) and expressed high product interest (M = 5.62/7). These findings confirmed that the participants were sufficiently involved and motivated in the experiment, validating the appropriateness of the experimental task.

(e.g., dislike) (measured by self-reported items) (Kirmani 1997). Behavioral avoidance involves not engaging in the action anticipated by the seller (i.e., not clicking on the SSR) (i.e., the participants' click/non-click on the SSR in the experiments) (Burke et al. 2005). The click behaviors of the participants were captured in the experiment. Details about our measurement approaches are explained later.

Tasks and Procedures

The participants started with watching a short introductory video about the experimental task. Afterward, the participants completed the following tasks in sequence.

(1) *Eye-tracking task*. We employed an eye-tracking device to record the participants' gaze data as manipulation checks and as a supplementary measurement of cognitive avoidance (i.e., the cognitive aspect of increased SSR processing). A third of the participants of each experimental group were assigned to an eye-tracking condition to perform this eye-tracking task (i.e., they were equipped with an eye-tracking device during the experimental tasks).[6] A set of calibrations was conducted in which the participants were asked to look at a group of 16 dots on the screen sequentially. A research assistant immediately corrected any calibration error whenever an error occurred. Following the training task, the participants entered a *brand selection task* and a *product-search task*, during which their visual attention was recorded.

(2) *Brand selection task*. This task was to elicit the most preferred brand of a participant and determined the participant's search query in the subsequent product-search task. With a multiple-choice question, we asked the participants to select their preferred headset brand from four popular brands (i.e., Audio-technica, Beats, Sennheiser, and Sony). These four brands were identified via a pre-test. We ensured that the participants considered these four headset brands popular.

(3) *Product-search task (the main experimental task)*. We instructed the participants to imagine that they were searching for a headset on the experimental website (presumably, Taobao.com) for personal use. We asked them to use their preferred brand as the search query (e.g., "Beats headset" as the search query if

[6] Each experimental group contained ten participants with eye-tracking. The cost of equipment and time involved in conducting bio-physiological studies (e.g., eye-tracking and fMRI/EEG) make it infeasible to conduct such studies using a large sample size. The literature suggests that a sample size of ten is sufficient in statistical analyses for such studies (e.g., Kuan et al. 2014).

a participant chose "Beats" as his/her preferred brand). We then presented a manipulated search results page to the participants, which contained a sponsored product (i.e., the SSR) followed by organic results. The SSR had a different brand from participants' preferred brand, and the SSR brand was the next one in the four-brand chain shown previously. For example, if a participant searched for "Audio-technica headsets" (i.e., the participant chose this brand as the preferred brand), then the SSR brand would be Beats. All the organic results matched the brand in the search query (e.g., Audio-technica in the example).

The participants could freely browse the search results page without time constraints. They could click on any of the search results (either the SSR or any of the organic results) if they wanted to read detailed product information, as if they were browsing the page as usual. However, we informed the participants that the detailed product information would be blocked, for experimental purposes, if they clicked on a product. Specifically, when a participant clicked on a product, a new blank webpage (which was supposed to present the detailed product information) was opened in the background tab in the multi-tab Internet browser. The participants were asked not to switch to that page but to stay on the search results page until they finished browsing it and answered a post-task questionnaire. These experimental designs and instructions were to minimize the potential confounding effects of product information.

Following the product-search task, the participants completed a post-task questionnaire for the main variables examined in this study. The entire experimental session lasted for approximately one hour. We gave the participants HKD 50[7] as compensation for their participation.

Search Results Page

The manipulated search results page included a total of ten headsets, and a pre-test demonstrated that the participants perceived the manipulated page to be similar to the search results page of Taobao.com. Specifically, the pre-test found no significant differences in product attractiveness in the pictures, descriptions, and price, thus validating the use of the manipulated search results page in our study. We manipulated the positive informational cues and presented them alongside the SSR in a rectangular zone of

[7] This amount was approximately USD 7 at the time of the experiment. This incentive was considered attractive to students because it would take them nearly an hour of work on- or off-campus to earn this amount.

200 pixels wide and 48 pixels high. The Q-cue was operationalized by providing a high average quality rating of the sponsored product by other users, using a popular five-point scale, with an average score of 4.9 out of 5.0 points: 

.[8] The C-cue was operationalized by presenting the average credibility rating of the seller by other users, also using a five-point scale, with an average score of 4.9 out of 5.0 points: 

. Either a Q-cue or a C-cue was presented on a search results page. Figure B1 in Appendix B shows screenshots of the manipulated search results page in the treatment groups.

Measurements

Experiment 1 involved variables including the SSR-processing dimension of suspicion, manipulation checks, and controls. Appendix C presents the measurement items. As explained earlier, the SSR-processing dimension of participants' suspicion was operationalized, in a reversed manner, as participants' avoidance of the experimental SSR. We used three sets of measurements for the three forms of SSR avoidance to evaluate whether the participants increased their processing of the experimental SSR. First, cognitive avoidance of the SSR was captured by three self-reported items (Cho and Cheon 2004). We also adopted the following two measures using the participants' gaze data as supplementary measurements for cognitive avoidance: percentage of fixation on the SSR and percentage of time viewing the SSR from the related literature (Cyr et al. 2009).[9]

$$\textit{Percentage of Fixation on the SSR} = \frac{\textit{Number of Fixations on the SSR Zone}}{\textit{Total Number of Fixations on the Search Results Page}}$$

$$\textit{Percentage of Time Spent on Viewing the SSR} = \frac{\textit{Time Spent on Viewing the SSR Zone}}{\textit{Total Time Spent on Viewing the Search Results Page}}$$

Second, we measured the participants' affective SSR avoidance using two self-reported items developed in previous studies on advertising avoidance (Cho and Cheon 2004). Third, we used the participants' actual click/non-click on the experimental SSR as an indicator of their behavioral avoidance of the SSR (a binary measurement of whether or not participants clicked on the SSR).

[8] The presentation format of these ratings was adopted from Taobao.com. To decide the specific ratings, we confirmed in a pre-test that with the quality rating of "4.9/5.0," participants perceived the product as of high product quality (M = 6.08/7.00).
[9] A fixation was calculated when a participant maintained his/her visual gaze on a single location longer than 0.05 seconds (Cyr et al. 2009). The time spent on viewing the SSR was measured as the total time a participant spent on the SSR area.

To examine whether the internalization of informational cues increases users' perceptions of SSRs, we measured the participants' perceived quality of the sponsored product (four items) (Boulding and Kirmani 1993; Erdem and Swait 2004) and perceived credibility of the seller (four items) (Erdem and Swait 2004; Newell and Goldsmith 2001). All items used 7-point scales, with "7" as the highest level of agreement.

In addition, six control variables were measured: (1) the participant's general trust of the platform (Lim et al. 2006), (2) their familiarity with the platform (i.e., Taobao.com) (Bhattacherjee 2002), (3) their familiarity with the search product (i.e., headset) (Kent and Allen 1994), (4) their interest in headsets (Bloch and Richins 1983), and their demographic information, including (5) age and (6) gender.

Results of Experiment 1

Manipulation Checks

Table 1 presents the descriptive statistics. We checked whether the participants noticed the SSR and the informational cue on the search results page by performing two sets of manipulation checks. First, we checked the participants' gaze data. For the total time spent viewing the search results page, participants allocated 14.33% of their time, on average (ranging from 4.06% to 23.37%), looking at the SSR zone. As for the participants' visual attention to informational cues, the average viewing time for an informational cue was 2.68 seconds (ranging from 0.98 to 4.36 seconds). These results indicate that the participants successfully noticed the SSR and informational cue. Second, we asked the participants the following question: "Did you notice a sponsored search result presented on the search results page? (Yes/No)." For participants who answered "Yes," we further asked: "Which was the sponsored product (Audio-technica/ Beats/ Sennheiser/ Sony)?" and "Did you notice a rating presented alongside the sponsored search result (Yes/No)? If "Yes," what was the rating about (product quality/seller credibility)?" The results show that all the participants noticed the SSR and successfully recalled the brand of the SSR. All the participants assigned to the conditions with informational cues correctly recalled their respective informational cues.

Table 1. Descriptive Statistics of Experiment 1: mean (std dev.)

	No Cue	Q-cue	C-cue
Main Variables			
Cognitive Avoidance (self-reported) (Cronbach's α = 0.87)	4.13 (1.23)	3.43 (1.16)	3.40 (0.89)
Cognitive Avoidance (Percentage of Fixation on the SSR)	14.33%	21.90%	20.91%

Table 1. Descriptive Statistics of Experiment 1: mean (std dev.)

	No Cue	Q-cue	C-cue
Cognitive Avoidance (Percentage of Time Spent on Viewing the SSR)	9.08%	16.59%	16.11%
Affective Avoidance (self-reported) (Cronbach's α = 0.82)	4.87 (0.71)	3.99 (1.10)	4.08 (0.96)
Behavioral Avoidance (Number of Non-Clicks on the SSR)	26 out of 30	16 out of 30	18 out of 30
Perceived Sponsored Product Quality (Cronbach's α = 0.82)	3.77 (0.73)	5.03 (0.72)	4.80 (0.83)
Perceived Seller Credibility (Cronbach's α = 0.84)	3.63 (0.78)	4.03 (0.92)	4.65 (0.86)
Control Variables			
Participants' General Trust of taobao.com (Cronbach's α = 0.91)	5.35 (1.23)	5.40 (0.93)	5.77 (0.83)
Participants' Familiarity of taobao.com (Cronbach's α = 0.85)	5.63 (0.81)	5.73 (0.91)	5.68 (0.73)
Participants' Familiarity of Headset (Cronbach's α = 0.85)	4.82 (0.93)	5.16 (0.95)	4.86 (0.90)
Participants' Interests in Headset	5.27 (1.11)	5.43 (1.17)	5.43 (1.04)
Participants' Age	23.63 (3.70)	24.03 (3.39)	22.13 (3.56)
Participants' Gender	60.00% male	40.00% male	43.33% male

Effects of Informational Cues on Increased Processing of SSR

We first conducted a multiple analysis of covariance (MANCOVA) to check the overall effects of the informational cues on the participants' avoidance of the SSR. We observed significant main effects of the informational cues (Wilks' $\lambda = 0.55$, $F = 9.86$, $p < 0.001$) on the three forms of SSR avoidance. We then conducted two ANCOVAs to test the effects of an informational cue on the participants' cognitive and affective avoidance. The ANCOVA results reveal significant differences among the groups in terms of cognitive avoidance (self-reported) ($F = 5.52$, $p = 0.006$) and affective avoidance ($F = 21.05$, $p < 0.001$) (see Table 2). Planned comparisons show that, compared with the no-cue condition, an informational cue significantly decreased the participants' cognitive avoidance ($t_{Q\text{-}cue} = 26.50$, $p < 0.001$ and $t_{C\text{-}cue} = 26.41$, $p < 0.001$) and affective avoidance ($t_{Q\text{-}cue} = 30.39$, $p < 0.001$ and $t_{C\text{-}cue} = 31.64$, $p < 0.001$) of the SSR.

Table 2. SSR Avoidance in Experiment 1

DV	IV	Type III Sum of Squares	df	Mean Square	F value	*p-value*
Cognitive Avoidance of the SSR (ANCOVA)†	**Informational Cue**	10.65	2	5.33	5.52	***0.006***
Affective Avoidance of the SSR (ANCOVA)†	**Informational Cue**	36.95	2	18.47	21.05	***0.000***
		B	S.E.	Wald	df	*p-value*
Behavioral Avoidance of the SSR (Logistic Regression)†	**Q-cue**	−1.63	0.67	5.85	1	***0.016***
	C-cue	−1.54	0.70	4.86	1	***0.028***

Note: † Control variables were included in the tests.

In addition to the self-reported measurement of cognitive avoidance, we conducted two ANCOVAs, with the two eye-tracking measures as DVs, as an additional test for the effects of informational cues on cognitive avoidance. The results showed a pattern similar to that of the self-reported measure. We detected

significant differences among the groups about the percentage of fixations on the SSR ($F = 2.94$, $p = 0.048$) and the percentage of time on viewing the SSR ($F = 3.68$, $p = 0.022$). Planned comparisons revealed that compared with the no-cue condition, the Q-cue and the C-cue increased the participants' fixations ($t_{Q\text{-}cue} = 9.43$, $p < 0.001$ and $t_{C\text{-}cue} = 9.17$, $p < 0.001$) and viewing time ($t_{Q\text{-}cue} = 7.36$, $p < 0.001$ and $t_{C\text{-}cue} = 7.22$, $p < 0.001$) of the SSR.

We ran a logistic regression to test the effects of informational cues on behavioral avoidance of the SSR.[10] Table 1 reports the number of participants under various conditions who *did not click* on the experimental SSR (i.e., behavioral avoidance). The larger the number of non-clicks in the group, the higher behavioral avoidance of the participants. Table 2 shows the results of the logistic regressions. The numbers of participants who did not click on the SSR in Q-cue (16 of the 30 participants) and C-cue (18 of the 30 participants) conditions were significantly lower ($\beta_{Q\text{-}cue} = -1.63$, $p = 0.016$ and $\beta_{C\text{-}cue} = -1.54$, $p = 0.028$) than that in the no-cue condition (26 of the 30 participants who did not click on the SSR).

We conducted a set of ANOVAs to test whether the informational cues increased the participants' perceptions of the SSR. The results showed that, as expected, compared with no-cue, a Q-cue increased the participants' perceived quality of the sponsored product ($p < 0.001$), and a C-cue increased the participants' perception of seller credibility ($p < 0.001$). That is, an informational cue improved the perception of the corresponding SSR, which is consistent with our theoretical arguments.

In summary, the results of Experiment 1 revealed that an informational cue led to the participants' increased processing of the experimental SSR (as reflected by the participants' lower cognitive, affective and behavioral avoidance of the SSR), providing evidence for the effects described in H1.

Discussions of Experiment 1

The results of Experiment 1 provided compelling evidence for our theoretical arguments and hypotheses. First, we verified the effects of informational cues on the participants' increased processing of the SSR. Second, internalizing the positive informational cues in our experiment improved the participants'

[10] We applied logistic regressions, because the DV of behavioral avoidance was a binary variable (i.e., whether or not the participants clicked on the SSR).

perceptions of the SSR. However, Experiment 1 focused only on the effects on the SSR with a popular brand. Experiment 2 examined the role of the popularity of the SSR brand, as we posited that informational cues lead to users' increased processing of the SSR via their reduced decision uncertainty for an SSR with a popular brand but not for an SSR with an unknown brand (H1).

4.2 Experiment 2

Experimental Designs

We employed a 2 (popularity of SSR brand: popular vs. unknown) × 3 (informational cue: no cue vs. a Q-cue vs. a C-cue) between-subjects design (Table 3). We recruited participants who had a demographic background similar to that of the participants of Experiment 1.

Table 3. Experimental Groups of Experiment 2 (Sample Size)

		Informational Cue		
		No Cue	*Q-cue*	*C-cue*
Popularity of SSR Brand	*Popular*	**Group 1** (20)	**Group 2** (20)	**Group 3** (20)
	Unknown	**Group 4** (20)	**Group 5** (20)	**Group 6** (20)

The experimental tasks and procedures were similar to those of Experiment 1, with four changes. First, we replaced the product in the product-search task with an athletic T-shirt.[11] Similar to Experiment 1, through a pre-test, we identified four popular brands in the brand selection task: Nike, Adidas, New Balance, and Li-ning. As in Experiment 1, the participants used their preferred brand as the search query in the product-search task. Second, for the participants assigned to the "unknown SSR brand" conditions, the SSR brand was "KCA." We conducted a pre-test to ensure that none of the participants had heard of this brand. Third, we tested participants' decision uncertainty about evaluating the search results (two items) as the mediator (Gifford et al. 1979; Urbany et al. 1989). We measured the participants' perceived malintent of the platform (two items) (Campbell and Kirmani 2000; Kirmani and Zhu 2007) to verify our argument that such a perception is a major concern when the SSR brand is unknown. We also collected the participants' perceived popularity of the SSR (three items) as a check for our manipulation of the SSR brand (Mishra et

[11] We conducted a pre-test, and the results showed that the participants were generally familiar with athletic T-shirts (M = 5.36) and had interests in them (M = 5.88).

al. 1993; Netemeyer et al. 2004). Fourth, we did not employ the eye-tracking device in Experiment 2 (i.e., no eye-tracking task was involved). Experiment 1 showed that the self-reported measure of cognitive avoidance produced results similar to those of the eye-tracking device.[12] Thus, we considered the self-reported measure to be sufficient in capturing the participants' cognitive avoidance.

Results of Experiment 2

Manipulation Checks

Table 4 presents the descriptive statistics of Experiment 2. Similar to Experiment 1, we checked whether the participants noticed and recalled the experimental SSR and informational cues. We excluded the data of two participants from the subsequent data analysis: one in Group 1 who did not notice the SSR, and one in Group 5 who did not recognize the SSR correctly. We also conducted additional hypothesis tests that included the data of the two participants, and the results were consistent with the obtained results after their exclusion.

When the participants received the SSR with an unknown brand, their perceived popularity of the SSR was significantly lower (M = 3.35) than that when the SSR was with a popular brand (M = 4.65, $p < 0.001$). This result confirmed the success of our manipulation of the popularity of the SSR brand.

Table 4. Descriptive Statistics of Experiment 2: mean (std dev.)

	Popularity of SSR Brand	No Cue	Q-cue	C-cue
Main Variables				
Cognitive Avoidance (self-reported) (Cronbach's α = 0.90)	Popular	4.16 (1.01)	3.02 (0.95)	3.01 (0.93)
	Unknown	4.35 (0.95)	4.21 (1.12)	4.17 (1.15)
Affective Avoidance (self-reported) (Cronbach's α = 0.87)	Popular	4.32 (1.13)	3.35 (0.92)	3.33 (0.91)
	Unknown	4.70 (1.01)	4.74 (1.03)	4.73 (0.92)
Behavioral Avoidance (Number of Non-Clicks on the SSR)	Popular	15 out of 19	4 out of 20	4 out of 20
	Unknown	17 out of 20	14 out of 19	16 out of 20
Decision Uncertainty (Cronbach's α = 0.87)	Popular	4.32 (1.54)	3.05 (0.86)	2.78 (0.85)
	Unknown	4.53 (0.90)	4.17 (0.95)	4.27 (1.21)
Perceived Malintent of the Platform (Cronbach's α = 0.86)	Popular	3.74 (0.95)	3.00 (1.09)	3.28 (0.79)
	Unknown	4.43 (1.00)	3.97 (1.10)	4.23 (0.98)
Control Variables and Manipulation Checks				
Participants' General Trust of taobao.com (Cronbach's α = 0.83)	Popular	5.26 (0.71)	5.05 (0.81)	5.13 (0.87)
	Unknown	5.22 (0.75)	5.54 (0.93)	5.23 (0.63)
Participants' Familiarity of taobao.com (Cronbach's α = 0.87)	Popular	5.46 (1.31)	5.60 (1.12)	5.73 (1.06)

[12] We found that the eye-tracking patterns observed in Experiment 1 were consistent with the self-reported results of participants' cognitive avoidance of the SSR across Experiments 2 and 3, thereby indicating the robustness of our findings.

Table 4. Descriptive Statistics of Experiment 2: mean (std dev.)

	Popularity of SSR Brand	No Cue	Q-cue	C-cue
Participants' Familiarity of Athletic T-shirt (Cronbach's α = 0.91)	Unknown	5.73 (1.06)	5.28 (1.32)	5.70 (0.86)
	Popular	5.09 (1.28)	5.27 (0.91)	5.23 (1.24)
Participants' Interests in Athletic T-shirt	Unknown	5.13 (1.27)	5.57 (1.04)	5.38 (0.95)
	Popular	5.26 (1.19)	4.95 (1.19)	5.35 (1.09)
Participants' Age	Unknown	5.45 (1.05)	5.00 (1.29)	5.80 (0.52)
	Popular	24.16 (2.97)	23.95 (3.47)	24.80 (3.52)
Participants' Gender	Unknown	23.95 (2.67)	24.58 (3.67)	24.45 (3.19)
	Popular	42.11% male	35.00% male	40.00% male
Perceived Popularity of the SSR (Cronbach's α = 0.88)	Unknown	45.00% male	36.84% male	45.00% male
	Popular	4.65 (1.00)	5.09 (1.26)	4.69 (1.10)
	Unknown	3.35 (1.19)	3.09 (1.34)	3.18 (1.17)

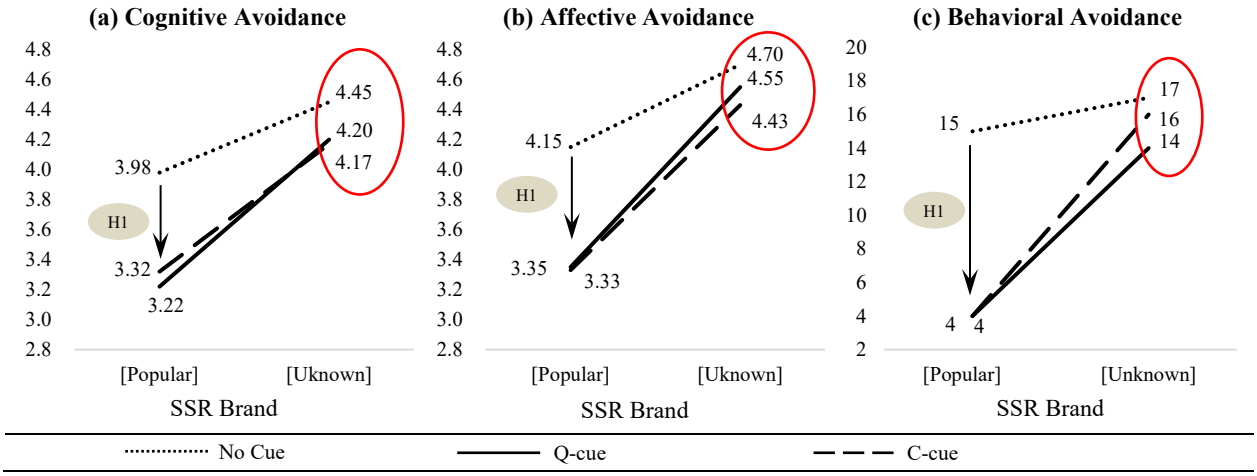
Effects of Informational Cues on Increased Processing of the SSR

Table 4 and Figure 3 report the average self-reported cognitive and affective avoidance scores and the number of participants across various conditions who did not click on the experimental SSR (i.e., behavioral avoidance). We conducted a MANCOVA, which revealed significant main effects of the informational cues (Wilks' $\lambda = 0.84$, $F = 6.79$, $p < 0.001$), popularity of SSR brand (Wilks' $\lambda = 0.79$, $F = 9.47$, $p < 0.001$), and interaction effects between the two variables (Wilks' $\lambda = 0.90$, $F = 3.79$, $p = 0.013$) on the three forms of SSR avoidance.

To test the effects of Q-cue and popularity of SSR brand on SSR avoidance, we conducted two ANCOVAs: one for cognitive avoidance and one for affective avoidance. We included data from conditions of no-cue and a Q-cue (Groups 1, 2, 4, and 5). The results for cognitive avoidance showed a significant main effect of the Q-cue ($F[1, 77] = 6.49$, $p = 0.013$) and a significant interaction effect between the Q-cue and the popularity of SSR brand ($F[1, 77] = 4.90$, $p = 0.030$) (see Table 5). Figure 3(a) illustrates the different effects of the informational cue on cognitive avoidance for SSR with a popular brand vs. an unknown brand. The Q-cue alongside the SSR with a popular brand significantly reduced participants' cognitive avoidance ($M = 3.02$, $SD = 0.95$) compared with those in the no-cue condition ($M = 4.16$, $SD = 1.01$, $F[1, 68] = 11.60$, $p = 0.001$); by contrast, the Q-cue alongside the SSR with an unknown brand did not reduce cognitive avoidance ($M = 4.21$, $SD = 1.12$), compared with those in the no-cue condition ($M = 4.35$, $SD = 0.95$, $F[1, 68] = 0.07$, $p = 0.788$). Similar patterns were observed regarding affective avoidance.

The Q-cue reduced participants' affective avoidance only when the SSR brand was popular ($M_{Q\text{-}cue}$ = 3.35, SD = 0.95 vs. $M_{no\text{-}cue}$ = 4.32, SD = 1.13, F[1, 68] = 7.82, p = 0.007), but not when the SSR brand was unknown ($M_{Q\text{-}cue}$= 4.70, SD = 1.01 vs. $M_{no\text{-}cue}$ = 4.74, SD = 1.03, F[1, 68] = 0.07, p = 0.793).

Figure 3. Results of Informational Cues on SSR Avoidance (Experiment 2)



We ran a logistic regression to test the effects of informational cues on behavioral SSR avoidance. The results show a significant main effect of the Q-cue (β = −1.61, p = 0.006) and a significant interaction effect between the Q-cue and the popularity of the SSR brand (β = −2.38, p = 0.049) on behavioral avoidance (see Table 5). Specifically, when the SSR brand was popular, the number of participants who did not click on the SSR in the Q-cue condition (4 of the 20 participants) was significantly lower (β = −3.49, p = 0.002) than that in the no-cue condition (15 of the 19 participants). However, when the SSR brand was unknown, a Q-cue did not reduce the number of participants who did not click on the SSR (14 of the 19 participants vs. 17 of the 20 participants in the no-cue condition, β = −1.12, p = 0.303). Therefore, the results of the three sets of analyses on cognitive, affective, and behavioral avoidances were consistent. In particular, the effects of informational cues on increased processing of the SSR were significant only when the SSR brand was popular (see Figure 3), lending support to H1.

Table 5. SSR Avoidance in Experiment 2

	Informational Cues									
	Q-cue					*C-cue*				
	Type III Sum of Squares	df	Mean Square	F value	*p-value*	Type III Sum of Squares	df	Mean Square	F value	*p-value*

Table 5. SSR Avoidance in Experiment 2

DV: ***Cognitive*** Avoidance of the SSR (ANCOVA)[†]										
Informational Cue	6.85	1	6.85	6.49	***0.013***	8.15	1	8.15	7.51	***0.008***
Popularity of SSR Brand	9.11	1	9.11	8.63	*0.004*	9.06	1	9.06	8.34	*0.005*
Informational Cue * Popularity of SSR Brand	5.17	1	5.17	4.90	***0.030***	4.30	1	4.30	3.96	***0.001***
DV: ***Affective*** Avoidance of the SSR (ANCOVA)[†]										
Informational Cue	3.17	1	3.17	3.05	***0.085***	3.42	1	3.42	4.62	***0.035***
Popularity of SSR Brand	14.77	1	14.77	14.21	*0.000*	12.26	1	12.26	16.56	*0.000*
Informational Cue * Popularity of SSR Brand	4.86	1	4.86	4.67	***0.034***	3.29	1	3.29	4.44	***0.039***
DV: ***Behavioral*** Avoidance of the SSR (Logistic Regression)[†]										
	B	df	Wald	S.E.	*p-value*	B	df	Wald	S.E.	*p-value*
Informational Cue	−1.61	1	7.44	0.59	***0.006***	−1.73	1	7.64	0.63	***0.006***
Popularity of SSR Brand	−1.50	1	6.54	0.59	*0.011*	−1.52	1	6.47	0.60	*0.011*
Informational Cue * Popularity of SSR Brand	−2.38	1	3.87	1.21	***0.049***	−2.53	1	4.44	1.20	***0.035***

Note: [†] Control variables were included in the tests.

We then conducted another two ANCOVAs and logistic regression to test the effects of the C-cue and the popularity of the SSR brand on SSR avoidance with data from the no-cue and the C-cue conditions (i.e., Groups 1, 3, 4, and 6). We obtained results similar to those for the Q-cue, including significant main effects of the C-cue on cognitive avoidance ($F[1, 78] = 7.51$, $p = 0.008$), affective avoidance ($F[1, 78] = 4.62$, $p = 0.035$), and behavioral avoidance ($\beta = -1.73$, $p = 0.006$). Thus, H1 was supported when a C-cue was provided alongside an SSR with a popular brand.

We further tested our arguments that the informational cue is effective only when the SSR brand is popular. The results also showed significant interaction effects on cognitive avoidance ($F[1, 78] = 3.96$, $p = 0.001$), affective avoidance ($F[1, 78] = 4.44$, $p = 0.039$) and behavioral avoidance ($\beta = -2.53$, $p = 0.035$) between the C-cue and the SSR brand (see Table 5). In particular, the C-cue reduced the participants' cognitive avoidance ($M_{C\text{-}cue} = 3.01$, SD = 0.93 vs. $M_{no\text{-}cue} = 4.16$, SD = 1.01, $F[1, 69] = 11.05$, $p = 0.001$), affective avoidance ($M_{C\text{-}cue} = 3.33$, SD = 0.91 vs. $M_{no\text{-}cue} = 4.32$, SD = 1.13, $F[1, 69] = 8.92$, $p = 0.004$) and behavioral avoidance ($\beta = -3.90$, $p = 0.002$) only when the SSR brand was popular but not when the SSR brand was unknown (cognitive avoidance: $M_{C\text{-}cue} = 4.17$, SD = 1.15 vs. $M_{no\text{-}cue} = 4.35$, SD = 0.95, $F[1, 69] = 0.31$, $p = 0.579$; affective avoidance: $M_{C\text{-}cue} = 4.73$, SD = 0.92 vs. $M_{no\text{-}cue} = 4.74$, SD = 1.03, $F[1, 69] = 0.01$, $p = 0.962$; behavioral avoidance: $\beta = -0.41$, $p = 0.652$). Therefore, our arguments were verified.

Mediation Test Results

To test the mediating role of decision uncertainty in the effects of informational cues on increased processing of SSRs and verify whether this mediating effect existed only for popular SSR brands, we conducted a moderated mediation test. We used a parameter-based bootstrapping approach to calculate the bias-corrected confidence intervals (CIs) using 10,000 resamples and specified a 95% CI (Hayes and Rockwood 2017; Preacher 2015). This approach is suitable for our study because it addresses the parallel multiple-mediators issue (i.e., decision uncertainty and perceived malintent in our study). Given the advancement of this approach in testing multiple mediators and moderated mediation effects, this approach has been widely adopted in recent studies across various fields, including IS and Marketing (Brown and Sias 2023; Costello and Malkoc 2022; Hou et al. 2023). Table 6 presents the results of the moderated mediation test. The results revealed that the conditional indirect effects between a Q-cue and SSR avoidance were significant for the SSR with a popular brand ($B_{cognitive\_avoidance} = -0.31$, $B_{affective\_avoidance} = -0.25$, and $B_{behavioral\_avoidance} = -0.67$; all the bias-corrected 95% CIs *exclude zero*). However, such effects did not exist when the SSR had an unknown brand ($B_{cognitive\_avoidance} = 0.10$, $B_{affective\_avoidance} = 0.08$, and $B_{behavioral\_avoidance} = 0.22$; all the bias-corrected 95% CIs *include zero*). Furthermore, the results suggested that the differences between the indirect effects (i.e., the moderated mediation) were significant ($B_{difference\_cognitive} = -0.41$, $B_{difference\_affective} = -0.33$, and $B_{difference\_behavioral} = -0.89$, all the bias-corrected 95% CIs *exclude zero*). We observed similar pattern in the C-cue conditions. These results attested to the mediating role of decision uncertainty when the SSR brand is popular.

We further verified that when the SSR brand was unknown, neither a Q-cue nor a C-cue reduced the participants' perceived malintent of the platform ($M_{Q\text{-}cue} = 3.97$ and $M_{C\text{-}cue} = 4.23$ vs. $M_{no\text{-}cue} = 4.43$; both $p > 0.1$), which was consistent with our expectations.

Table 6. Moderated Mediation Test of Experiment 2

	Q-cue					*C-cue*				
	Effect	S.E.	LLCI	ULCI	Zero included?	Effect	S.E.	LLCI	ULCI	Zero included?
Indirect effect tested: Informational Cue → Decision Uncertainty → ***Cognitive*** Avoidance of the SSR[†]										
Popular SSR Brand	−0.31	0.15	−0.64	−0.07	No	−0.40	0.17	−0.77	−0.12	No
Unknown SSR Brand	0.10	0.10	−0.06	0.32	Yes	−0.03	0.09	−0.22	0.17	Yes

Table 6. Moderated Mediation Test of Experiment 2

Moderated Mediation*	−0.41	0.20	−0.85	−0.09	No	−0.37	0.19	−0.81	−0.07	No
Indirect effect tested: Informational Cue → Decision Uncertainty → ***Affective*** Avoidance of the SSR†										
Popular SSR Brand	−0.25	0.15	−0.60	−0.04	No	−0.33	0.17	−0.71	−0.07	No
Unknown SSR Brand	0.08	0.08	−0.05	0.28	Yes	−0.02	0.08	−0.20	0.13	Yes
Moderated Mediation*	−0.33	0.19	−0.78	−0.06	No	−0.31	0.18	−0.72	−0.04	No
Indirect effect tested: Informational Cue → Decision Uncertainty → ***Behavioral*** Avoidance of the SSR†										
Popular SSR Brand	−0.67	6.10	−2.38	−0.01	No	−0.87	7.34	−2.96	−0.04	No
Unknown SSR Brand	0.22	4.92	−0.22	0.90	Yes	−0.06	0.50	−0.81	0.41	Yes
Moderated Mediation*	−0.89	10.92	−2.96	−0.03	No	−0.81	7.72	−2.80	−0.01	No

Note: † Control variables were included in the tests.
* Index of moderated mediation: the difference between conditional indirect effects.

Discussion of Experiment 2

The results of Experiment 2 supported the expected effects of informational cues on increasing users' processing of the experimental SSR. These effects are contingent upon the popularity of the SSR brand. As predicted, an informational cue effectively increases users' processing of the SSR only when the SSR brand is popular. Such an effect is mediated by reducing participants' decision uncertainty. However, providing positive informational cues alongside the SSR with unknown brand does not address users' decision uncertainty (i.e., these cues' failure to influence suspicion). In H2, we predict that for the SSR with an unknown brand, the cues can reduce user suspicion when the rating of the SSR is similar to those of top organic results. To test H2, we conducted Experiment 3 to examine the scenario where informational cues are presented for both organic results and the SSR.

4.3 Experiment 3

Experimental Design

We employed a 2 (popularity of SSR brand: unknown vs. popular) × 3 (informational cue alongside the SSR: no cue vs. a high Q-cue vs. a low Q-cue) between-subjects design (Table 7). While the focus of this experiment was mainly on the scenario of an unknown SSR brand to test H2, we also included the popular SSR brand conditions (i.e., supplementary Groups 4 to 6). Including these groups was to confirm that informational cues provided alongside an SSR with a *popular* brand can influence user suspicion regardless of the rating levels of the cues. The participants' demographic features were similar to those of Experiments

1 and 2.

Table 7. Experimental Groups of Experiment 3 (Sample Size)

		Informational Cue		
		No Cue	*High Q-cue*	*Low Q-cue*
Popularity of SSR Brand	*Unknown*	**Group 1** (20)	**Group 2** (20)	**Group 3** (20)
	Popular[*]	**Group 4** (20)	**Group 5** (20)	**Group 6** (20)

[*] Supplementary groups

The target product in the product search task of Experiment 3 was the same as that in Experiment 1 (i.e., a headset). The experimental tasks and procedures were similar to those in Experiment 2, with two changes. First, we used only one type of informational cue (i.e., a Q-cue) in Experiment 3 to simplify the experimental design. Second, each of the organic results had a Q-cue, and the organic results were presented in descending order in terms of the product quality rating shown in the informational cue for each result. The level for the experimental SSR's product quality rating was calculated on a relative basis: the rating was similar to either that of the top three organic products (i.e., the high Q-cue conditions) or that of the bottom three organic products (i.e., the low Q-cue conditions) on the first search results page. Figure B2 in Appendix B shows a screenshot of the manipulated search results page for one of the experimental groups.

Results of Experiment 3

Manipulation Checks

Table 8 presents the descriptive statistics of Experiment 3. A participant in Group 4 failed to notice the SSR, whereas the rest noticed the SSR and correctly recalled the informational cues. Thus, we removed this participant's data from data analyses (nevertheless, the results remained consistent when we included this participant's data in the analyses). We evaluated the participants' perceived popularity of the SSR as a manipulation check for the SSR brand. The participants' perceived popularity of the SSR was significantly higher (M = 5.00) in the popular SSR brand conditions than in the unknown SSR brand conditions (M = 3.88, $p < 0.001$), which indicated the successful manipulation of the popularity of the SSR brand.

Table 8. Descriptive Statistics of Experiment 3: mean (std dev.)

	Popularity of SSR Brand	No Cue	High Q-cue	Low Q-cue
Main Variables				

Table 8. Descriptive Statistics of Experiment 3: mean (std dev.)

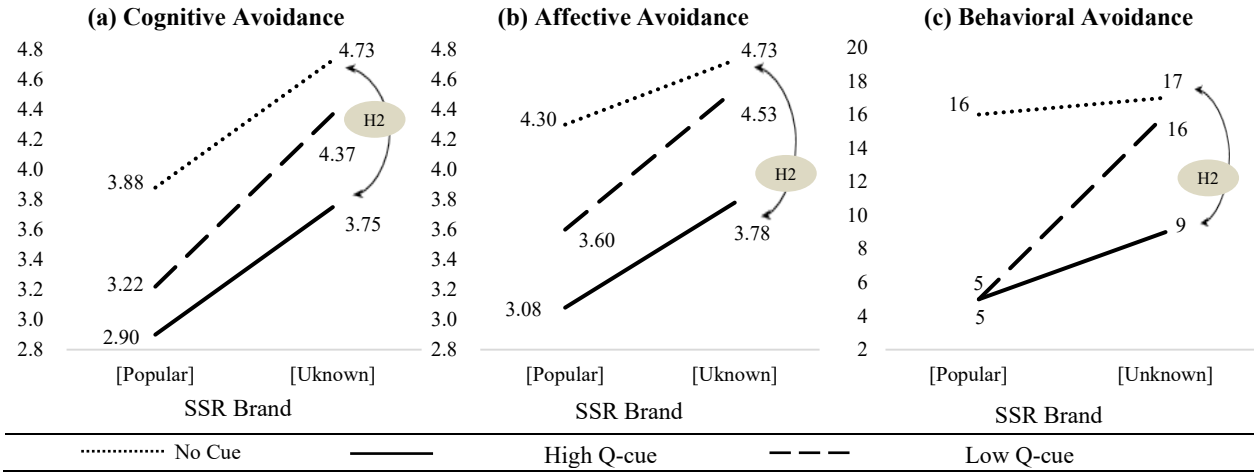
	Popularity of SSR Brand	No Cue	High Q-cue	Low Q-cue
Cognitive Avoidance (self-reported) (Cronbach's α = 0.92)	Unknown	4.74 (1.33)	3.75 (1.74)	4.37 (1.21)
	Popular	3.88 (0.83)	2.90 (1.12)	3.22 (1.07)
Affective Avoidance (self-reported) (Cronbach's α = 0.83)	Unknown	4.68 (1.30)	3.78 (1.47)	4.53 (1.14)
	Popular	4.30 (0.99)	3.08 (1.18)	3.60 (0.93)
Behavioral Avoidance (Number of Non-Clicks on the SSR)	Unknown	17 out of 19	9 out of 20	16 out of 20
	Popular	16 out of 20	5 out of 20	5 out of 20
Decision Uncertainty (Cronbach's α = 0.82)	Unknown	4.84 (1.11)	3.83 (1.30)	4.53 (0.87)
	Popular	4.38 (0.87)	3.35 (0.83)	3.55 (0.95)
Perceived Malintent of the Platform (Cronbach's α = 0.87)	Unknown	4.66 (1.28)	3.50 (1.22)	4.35 (1.01)
	Popular	4.10 (0.80)	3.23 (0.97)	3.98 (0.77)
Control Variables and Manipulation Checks				
Participants' General Trust of taobao.com (Cronbach's α = 0.86)	Unknown	5.07 (1.08)	4.76 (1.24)	5.14 (1.14)
	Popular	5.23 (1.29)	5.10 (1.22)	5.33 (1.02)
Participants' Familiarity of taobao.com (Cronbach's α = 0.92)	Unknown	4.99 (1.44)	5.37 (1.19)	5.54 (1.02)
	Popular	5.19 (0.89)	5.40 (1.22)	5.09 (1.31)
Participants' Familiarity of Athletic T-shirt (Cronbach's α = 0.82)	Unknown	4.98 (1.51)	5.13 (1.56)	5.22 (1.47)
	Popular	5.10 (1.51)	5.00 (1.57)	4.92 (1.42)
Participants' Interests in Athletic T-shirt	Unknown	5.11 (1.37)	5.50 (0.80)	5.50 (1.05)
	Popular	4.95 (1.00)	5.05 (1.36)	5.35 (1.04)
Participants' Age	Unknown	21.58 (2.24)	21.65 (2.58)	22.25 (2.81)
	Popular	20.65 (3.00)	20.20 (1.20)	20.90 (1.52)
Participants' Gender	Unknown	47.00% male	50.00% male	40.00% male
	Popular	40.00% male	55.00% male	40.00% male
Perceived Popularity of the SSR (Cronbach's α = 0.88)	Unknown	3.88 (1.61)	4.33 (1.09)	4.35 (1.05)
	Popular	5.00 (1.00)	4.92 (1.01)	4.48 (0.72)

Results of Hypothesis Testing

We tested the effects of the informational cue on the participants' avoidance when the SSR brand was unknown by comparing Groups 2/3 (i.e., the High Q-Cue & Low Q-Cue groups) versus Group 1 (i.e., the No-Cue group). We first conducted a MANCOVA and observed significant main effects of the informational cues (Wilks' $\lambda = 0.45$, $F = 7.79$, $p < 0.001$) on the three forms of SSR avoidance. We then conducted two ANCOVAs, one for cognitive avoidance and one for affective avoidance. The results revealed significant differences among the groups in terms of cognitive avoidance ($F[2, 50] = 4.69$, $p = 0.014$) and affective avoidance ($F[2, 50] = 13.81$, $p < 0.001$). Specifically, the results of planned comparisons showed that compared with no-cue, the high Q-cue reduced the participants' cognitive avoidance ($t = -2.13$, $p = 0.038$) and affective avoidance ($t = -2.16$, $p = 0.035$), but the low Q-cue did not reduce cognitive avoidance ($t = -0.80$, $p = 0.429$) or affective avoidance ($t = -0.38$, $p = 0.707$) (see Figure

4). We ran a logistic regression to test the effects of Q-cue on behavioral SSR avoidance. Results show that the high Q-cue ($\beta = -2.30$, $p = 0.014$), but not the low one ($\beta = -0.79$, $p = 0.433$), reduced behavioral avoidance. Thus, H2 was supported.

Figure 4. Results for the Effects of Informational Cues on SSR Avoidance (Experiment 3)



A supplementary planned comparison revealed that compared with the participants in the low Q-cue conditions, the participants in the high Q-cue conditions had a lower level of cognitive, affective, and behavioral avoidance (all ps < 0.05). We also tested the effects of the informational cue on the participants' avoidance of the SSR with a popular brand (see Figure 4). Consistent with our predictions, the product quality ratings, regardless of the rating level, increased the participants' processing of the experimental SSR (cognitive, affective and behavioral aspects; all ps < 0.05).

We employed an approach similar to of the one we used in Experiment 2 to test the mediation effects. Table 9 presents the results of the mediation test. The results revealed that the high Q-cue reduced SSR avoidance by addressing the participants' decision uncertainty ($B_{cognitive\_avoidance} = -0.43$, $B_{affective\_avoidance} = -0.36$, and $B_{behavioral\_avoidance} = -1.87$; all the bias-corrected 95% CIs *exclude zero*) and perceived malintent of the platform ($B_{cognitive\_avoidance} = -0.45$, $B_{affective\_avoidance} = -0.39$, and $B_{behavioral\_avoidance} = -0.18$; all the bias-corrected 95% CIs *exclude zero*). Such effects applied only to the high Q-cue but not to the low Q-cue (all the bias-corrected 95% CIs for the indirect effects of low Q-cues *include zero*). Thus, the mediation effects described in H2 were supported.

Table 9. Mediation Test when SSR Brand is Unknown in Experiment 3

	Mediators									
	Decision Uncertainty					*Perceived Malintent of the Platform*				
	Effect	S.E.	LLCI	ULCI	Zero included?	Effect	S.E.	LLCI	ULCI	Zero included?
Indirect effect tested: Informational Cue → Decision Uncertainty & Malintent → ***Cognitive*** Avoidance of the SSR[†]										
High Q-cue	−0.43	0.27	−1.08	−0.06	No	−0.45	0.22	−0.96	−0.11	No
Low Q-cue	−0.21	0.18	−0.64	0.04	Yes	−0.12	0.14	−0.43	0.14	Yes
Indirect effect tested: Informational Cue → Decision Uncertainty & Malintent → ***Affective*** Avoidance of the SSR[†]										
High Q-cue	−0.36	0.20	−0.74	−0.03	No	−0.39	0.23	−0.95	−0.04	No
Low Q-cue	−0.18	0.13	−0.46	0.06	Yes	−0.10	0.14	−0.43	0.13	Yes
Indirect effect tested: Informational Cue → Decision Uncertainty & Malintent → ***Behavioral*** Avoidance of the SSR[†]										
High Q-cue	−1.87	52.21	−2.86	−0.59	No	−0.18	9.30	−5.45	−3.01	No
Low Q-cue	−0.93	22.17	−3.09	0.28	Yes	0.05	9.21	−9.73	3.54	Yes

Note: [†] Control variables were included in the tests.

Discussion of Experiment 3

Experiment 3 provided compelling evidence for our hypothesized role of the rating level of an informational cue in increasing users' processing of SSR with an unknown brand when informational cues are presented alongside the SSR and organic results. First, in support of H2, we verified that only when the rating of SSR was as high as those of top organic results, will the informational cue influence suspicion. Second, we confirmed the mediating roles of the participants' decision uncertainty and perceived malintent in the effects of informational cues on increased processing of the SSR in this situation.

5. GENERAL DISCUSSION

SSRs are an integral part of online search services, but SSRs that deviate from users' search queries often trigger users' state suspicion. Drawing upon the overarching theoretical lens of suspicion, we contextualize user suspicion in the SSR context and investigate the effects of online informational cues on alleviating users' suspicion when they encounter an SSR during the product search process. We find that such effects are contingent upon the popularity of the SSR brand. When the SSR brand is popular, informational cues reduce users' decision uncertainty about the search results, which increase their further processing of an SSR. When the SSR brand is unknown, the effects of informational cues are further contingent upon the level of informational cues. Only for an SSR with a high-level informational cue comparable to those of top organic results, can the informational cue alongside the SSR address users' suspicion.

5.1 Theoretical Contributions

This study makes several theoretical contributions to IS research on online users' suspicion and decision-making while searching for products in an e-commerce platform. First, we contextualize user suspicion and extend suspicion theory to an online context, where SSRs can trigger users' state suspicion. Addressing suspicion in online settings is complicated owing to the multidimensional nature of suspicion. We advance the state suspicion literature by extending it to an increasingly prevalent context of online information search. Previous literature largely neglects situations where the suspicious users often avoid the targets in suspicion (i.e., the SSRs) and considers increased processing of the targets as an indicator of the activation of suspicion. We theorize that users' increased processing of the SSRs indicates a reduction of suspicion, which is different from the traditional offline studies. Our contextualization of suspicion in an online information search setting provides an in-depth understanding of the nature of online users' state suspicion. To the best of our knowledge, this study is the first to extend suspicion research to this domain. Our contextualization of suspicion and theorization serves as a foundation of future research in this area.

Second, we advance the suspicion literature by uncovering the inter-relationships among different dimensions of suspicion in our research context. In addition to the multi-dimensional nature of suspicion, understanding the inter-relationships among its dimensions helps us address suspicion in online information search settings. Current suspicion studies have largely neglected the relationships among the dimensions and focused on contexts where individuals intend to involve additional processing in the focal situation in suspicion (e.g., Campbell and Kirmani 2008). Our study focuses on unexplored scenarios where suspicious users do not initially intend to engage in the processing of the SSR (i.e., avoiding the SSR and focusing on organic results). In such scenarios, reducing decision uncertainty and perceived malintent can induce users' processing of the target in suspicion. To our knowledge, this study is among the first to provide a nuanced understanding of the inter-relationships among different dimensions of suspicion. It can be a base for future studies on investigating suspicious users' defensive responses toward online messages.

Third, we open the black box of how the internalization of informational cues can influence users' state suspicion in an SSR context. Recognizing the potential of positive informational cues to address user

suspicion, we further identify internalization as the underlying mechanism of the effects of informational cues. Previous research on the general effects of UGC has mainly focused on scenarios where users' suspicion is not activated (e.g., Wang et al. 2018a). Given the defensive bias of suspicious users toward SSRs, the effects and the underlying mechanisms of the effects of informational cues are not straightforward. Together with the inter-relationships among the dimensions of suspicion, we identify two routes for positive informational cues to address user suspicion (i.e., reducing decision uncertainty → increased processing and reducing perceived malintent → increased processing). Our theorization and results reveal the unstudied yet nuanced effects of online persuasive messages on addressing user suspicion.

Fourth, we further reveal the boundary conditions for the occurrence of information internalization for suspicious users by identifying the contingent factors that can trigger such internalization. As cognitive misers, users are not always ready to internalize informational cues, especially for suspicious users who do not believe a certain cue or the SSR itself. The extant literature, which focuses primarily on scenarios where users are not in a suspicious state (e.g., Amiot et al. 2012), is insufficient to articulate when an information cue can effectively address user suspicion. Our investigation of the situational factors to encourage internalization of informational cues advances the understanding of when positive information cues can address user suspicion via an internalization process.

The first situational factor we investigate is the popularity of the SSR brand, which is related to the credibility of a persuasive message. According to the persuasion literature (e.g., Campbell and Kirmani 2008), information credibility cannot be neglected in scenarios where users face numerous alternative choices from different sources. For an SSR with a popular brand, the perceived malintent is not the users' main concern. Positive informational cues can reduce users' decision uncertainty. By contrast, for an SSR with an unknown brand, simply presenting positive informational cues alongside the SSR would be ineffective. This study underscores the necessity to consider factors related to information credibility when studying the effects of online informational cues in a product search context.

The second situational factor we investigate is the level of informational cue alongside an SSR with an unknown brand. Recognizing the ineffectiveness of informational cues when the SSR brand is unknown,

we further explore the possibility of compensating for the factor of an unknown SSR brand with additional evidence to corroborate the informational cues. Our results demonstrate the persuasive power of informational cues when they are comparable to those of the top alternative choices. Such cues can address users' perceived malintent of the platform and decision uncertainty about the SSR. The extant persuasion literature suggests that users' suspicion of a target that lacks credibility is difficult to address (DeCarlo 2005). Therefore, we further advance the suspicion research by opening a new research venue of providing corroborating evidence for the target in suspicion to address users' suspicion.

5.2 Practical Contributions

This study has several practical implications. First, our findings provide guidelines to platforms on how to effectively present an SSR together with other organic results. Many SSRs are good choices for online users. However, users are often suspicious about the SSRs and avoid processing them. To encourage users' processing of an SSR, we need to address users' uncertainty in evaluating the SSR and concerns about the malintent of the platform in providing the SSR. In general, positive informational cues from UGC are helpful in addressing user suspicion. Collecting such cues, particularly, the key product- and seller-related ratings, is worthwhile for platforms.

Second, for an SSR with an unknown brand, we suggest that platforms check the rating of the SSR before allowing the SSR to be presented on top of the search results page. Platforms need to check whether the rating of the SSR is comparable to those of the top organic results. Given that organic results are typically presented in descending order with regard to the ratings (e.g., Adomavicius et al. 2019), users would perceive the SSR not qualified to be presented in a top position when the rating of an SSR is lower than those of top organic results. As a result, the effectiveness of sponsorships will be limited, and the platform should not position the SSR together with the top organic ones, because doing so not only does not help to promote the SSR, but also undermines the reputation of the platform.

Third, our results reveal that for an SSR with an unknown brand that has a not-so-high rating cue, even if a platform positions it with organic search results with comparing ratings, users are still suspicious about the SSR. We suggest that the platform offers additional evidence to corroborate the quality of the

SSR from the findings in the literature. For example, the platform can work with the sellers to provide explanations and/or constellations of different cues showing why the SSR with an unknown brand is presented and the key advantages of the recommended product compared with other product alternatives. Extant literature has confirmed that such explanations can help reduce users' concerns and enhance their trust in a seller (e.g., Wang and Wang 2019; Wang et al. 2018b). Our research has implications for companies with unknown brands who intend to pay for sponsored results to build their brand awareness.

5.3 Limitations and Future Research

This study has several limitations that need to be considered when interpreting our findings. First, we adopted laboratory experiment designs, which is a technique that has high internal validity but sacrifices realism and generalizability (Shadish et al. 2002). For instance, we instructed our participants that although they could click on any of the products, to gain experimental control, we did not provide the product details in the experiment; the specific format of informational cues and users' initial attitude toward the e-commerce platform may differ across different websites. We encourage future studies to validate our findings in field settings using different e-commerce platforms to increase realism and generalizability.

Second, we neglected several factors (e.g., some product-related factors, including product risk and type) when examining the effects of informational cues on user suspicion. We used the popularity of SSR brand to manifest SSR credibility in this study. Other potential manifestations (e.g., third-party endorsements) exist and can be examined further. Moreover, we only empirically tested the product quality rating in Experiment 3, other types of informational cues (e.g., seller's rating) were neglected. Another factor that deserves future investigation is the truthfulness of the ratings. Given the importance of a high rating, some companies may pay to received high ratings (Cheng et al. 2022). The perceived truthfulness of the informational cues can influence their effectiveness in alleviating user suspicion. Thus, we call for future research to examine such factors.

Third, we used the deviation of the SSR brand from users' search query as an instance of triggers of user suspicion. Other types of deviations and "anomalies," such as deviations in terms of other product attributes (e.g., when users search for a "wired headset," the platform recommends a wireless headset), also

exist in e-commerce. Future studies can extend our work by examining other forms of deviations, because these deviations may simultaneously trigger different dimensions of user suspicion. Platforms may need to provide different informational cues or justifications to deal with the dimensions of suspicion in such deviations. Future research is necessary to identify these forms of informational cues and justifications and examine their potential synergy or cannibalization effects on addressing user suspicion.

6. CONCLUSION

User suspicion is pervasive in online environments even when users face legitimate information. We examine the multi-dimensional nature of user suspicion in an SSR context. We demonstrate that the internalization of positive informational cues from UGC can address online users' suspicion by reducing their decision uncertainty and perceived malintent of the platform and increasing their processing of the SSRs. However, these cues are not always effective. When the SSR brand is popular, the internalization of informational cues increases users' processing of an SSR by reducing their decision uncertainty. By contrast, when the SSR brand is unknown, the informational cues become ineffective. However, if the SSR is provided with a high-rating-level informational cue that is comparable to those for top organic results, the informational cue alongside the SSR with an unknown brand can effectively address user suspicion. We open the black box of how and when the internalization of informational cues can address user suspicion in an underexplored SSR context. By properly deploying positive informational cues from UGC, platforms could present users with sponsored results that could be good alternatives for users, leading to a win-win-win situation for users, sellers, and the platform.

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APPENDIX A

Literature Review of Informational Cues

Table A1. The literature on Informational Cues

Studies	Context and Informational Cues	Method	Findings
Information Systems (IS)			
Wang et al. (2022)	e-Commerce • Product review • Seller ratings	Econometrics	Product reviews and seller ratings can reduce seller uncertainty and attract more users.
Deng et al. (2022)	Sponsored search results • Product quality ratings • Seller credibility ratings	Experiment	Informational cues can improve users' perceptions about the sponsored search results, thus reduce their avoidance of these results.
Liang et al. (2022)	Online outsourcing platform • Private information (e.g., self-assessed task content) • Public information (e.g., the buyer's rating)	Econometrics	Informational cues reduce users' uncertainty about the project, thus increase the success probability of the project.
Kim and Siva (2019)	Online crowdfunding • Other investigators' attributes: experience, investment choice	Econometrics	Informational cues about other investigators' choices/behaviors reduce users' decision uncertainty, thus influence their investment choice.
Tan et al. (2019)	e-Commerce • Product sales volumes • Seller feedback scores	Econometrics	Informational cues influence users' live chatting with sellers, thus influence their purchase decision.
Wells et al. (2011)	B2B e-commerce • Website attributes: security, download delay, navigability, visual appeal	Experiment	Informational cues about website quality can influence users' perceptions about the products.
Ferran and Watts (2008)	Video conference • Appealingness of the speaker • Friendliness of the speaker	Quasi-experiment	Informational cues influence users' adoption of the information from the speaker.
Nadkarni and Gupta (2007)	Evaluations of website complexity • Website attributes: texts, colors, graphics	Survey	Informational cues about website attributes reduce users' perceived ambiguity and uncertainty, thus influence their evaluation about the website.
Summary: current studies about informational cues from IS field have shown that informational cues about products/sellers may influence users' perceived uncertainty about the products/sellers and users' perceptions about the sellers' intent in the marketplace, which, in turn, affect their decision. These studies mainly focus on scenario where users' suspicion is not activated.			
Organizational Behavior (OB)			
Roth et al. (forthcoming)	Hiring related judgements • Political affiliation • Source of the information	Experiment	Informational cues can affect individuals' suspicion, thus influence their decisions in hiring.
Kim et al. (2021)	Middle manager decision under pandemic • CEO narcissism • Business threat due to COVID-19	Survey	Informational cues influence middle managers' perceptions about uncertainty, thus influence their ways to cope with the uncertainty during COVID-19.
Porck et al. (2019)	Multiple-team tasks • Team performance feedback	Experiment	Informational cues can reduce team members' uncertainty about their social identification, thus affect the multiteam system performance.
Hubbard et al.	Social approval assets	Econometrics	The framing of the informational cues will

Table A1. The literature on Informational Cues

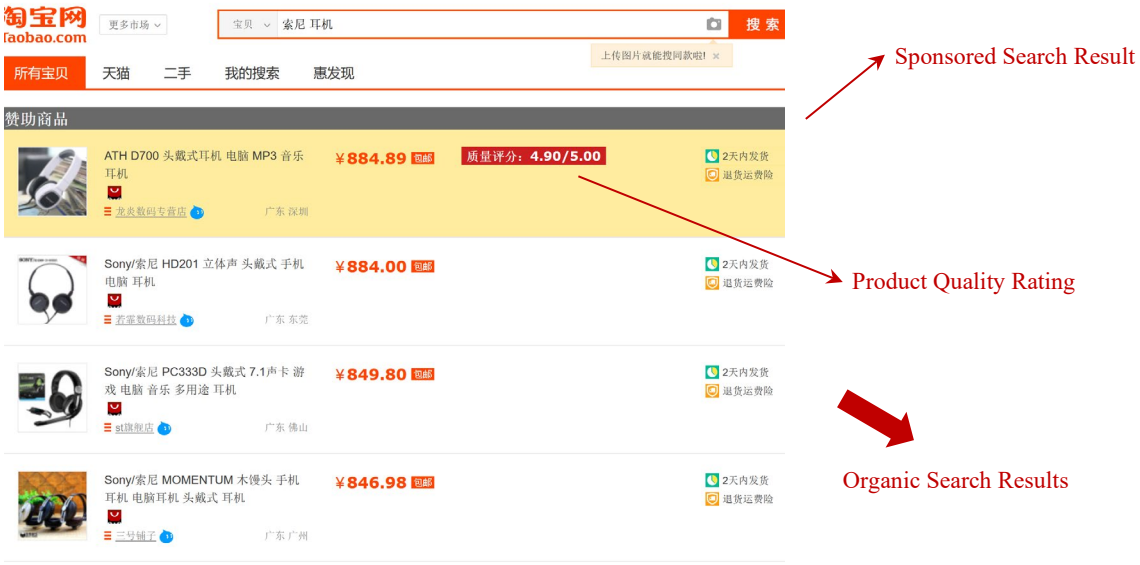
Studies	Context and Informational Cues	Method	Findings
(2018)	• Firm celebrity		influence individuals' judgment about the social approval assets.
Walker et al. (2012)	Job seeking • Firm's diversity	Experiment	The informational cues influence jobseekers' intentions to pursue the employment.
Lam et al. (2010)	Subordinate emotion at work • Supervisors' emotional exhaustion • Service climate	Survey	Informational cues about supervisors' emotional exhaustion service climate jointly affect subordinates' emotion at work.
Krosgaard et al. (2002)	Conflict management in organization • Managers' behavior • Human resource policy	Survey	Informational cues affect employees' perceptions about the managers' intent in the dealing with negative events.

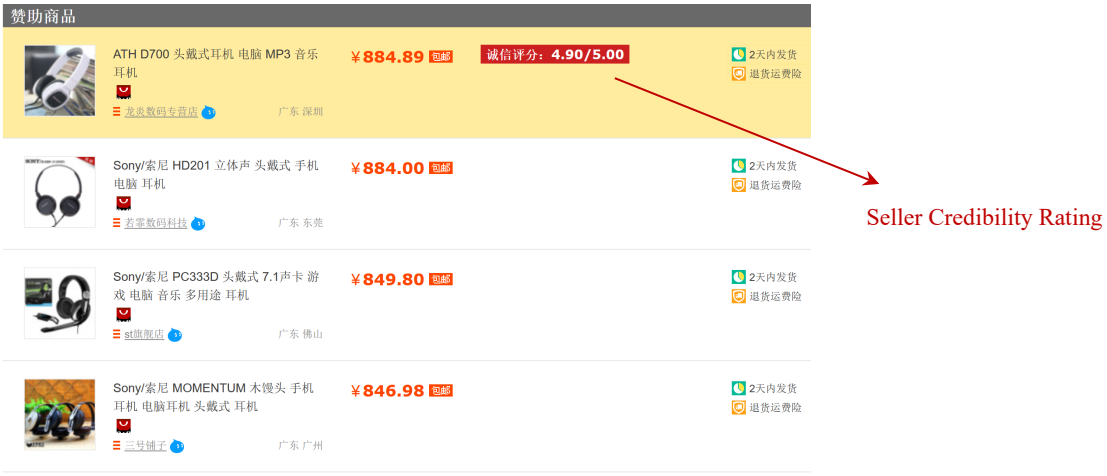
Summary: current studies about informational cues from OB field have shown that informational cues in the workplace may influence individuals' perceived uncertainty at work and employees' perceptions about the employers' intent in the workplace, resulting in influence of their decision making. These studies were mainly conducted in the context of workplace where the employees intend to approach the targets (e.g., their colleagues or supervisors), instead of ignore/avoid them.

APPENDIX B

Screenshot of the Manipulated Search Results Page in Experiment 1

Figure B1. Screenshots of the Manipulated Search Results Page in Experiment 1





Screenshot of the Manipulated Search Results Page in Experiment 3

Figure B2. Screenshot of the Manipulated Search Results Page in Experiment 3

APPENDIX C

Measurement Items for Variables

Table C1. Measurement Items

Variables	Items	Sources
Dependent Variables		
Cognitive Avoidance	• I intentionally ignored the sponsored search result on the search results page just now. • I intentionally didn't put my eyes on the sponsored search result on the search results page just now. • I intentionally didn't pay attention to the sponsored search result on the search results page just now.	Cho and Cheon (2004)
Behavioral Avoidance	• Indicated by the participant's actual click the SSR (a binary measurement of whether the participant clicked the SSR or not).	
Affective Avoidance	• I hated the sponsored search result on the search results page just now. • It would be better if there were no sponsored search results on the search results page just now.	Cho and Cheon (2004)
Mediators		
Decision Uncertainty	• I had difficulties evaluating the search results on the search results page just now and couldn't make a satisfactory decision. • I felt confused about evaluating the search results on the search results page just now and couldn't make a satisfactory decision.	Gifford et al. (1979); Urbany et al. (1989)
Perceived Malintent of the Platform	• The purpose for Taobao.com to present [the SSR] was to receive commissions from sellers. • The purpose for Taobao.com to present [the SSR] was to help users select a good product. (reverse coded)	Campbell and Kirmani (2000); Kirmani and Zhu (2007)
Other Variables		
Perceived Quality of the Sponsored Product	• I perceived the [sponsored product] to be of high quality. • Compared with other products listed on the search results page you just saw, what is the likely quality of the [sponsored product]? (1 = much lower than average quality; 7 = much higher than average quality) • I perceived the [sponsored product] to be durable. • The [sponsored product] appeared well crafted.	Boulding et al. (1993); Erdem et al. (2004)
Perceived Credibility of the Seller	• I trusted the [seller]. • The [seller] makes truthful claims. • The [seller] is honest. • I will not believe what the [seller] tells me. (reverse coded)	Newell et al. (2001); Erdem et al. (2004)
Perceived Popularity of the SSR	• Rate your perception of the [sponsored product]. (1 = not at all popular; 7 = very popular) • Rate your perception of the [sponsored product]. (1 = not widely accepted; 7 = widely accepted) • Rate your perception of the [sponsored product]. (1 = few consumers like it; 7 = many consumers like it)	Mishra et al. (1993); Netemeyer et al. (2004)

Table C1. Measurement Items

Variables	Items	Sources
Familiarity with the Online Shopping Platform	• I am familiar with the process of searching for products on Taobao.com. • I am familiar with buying products on Taobao.com. • I am familiar with inquiring about reputation ratings on Taobao.com. • Overall, I am familiar with Taobao.com.	Bhattacherjee (2002)
Familiarity with the Search Product	• I am familiar with headsets (Experiments 1 and 3) / athletic T-shirts (Experiment 2). • I am experienced with headsets (Experiments 1 and 3) / athletic T-shirts (Experiment 2). • I am knowledgeable about headsets (Experiments 1 and 3) / athletic T-shirts (Experiment 2).	Kent and Allen (1994)
Interest in the Search Product	• I am interested in headsets (Experiments 1 and 3) / athletic T-shirts (Experiment 2).	Bloch and Richins (1983)
General Trust of the Platform	• In general, I trust Taobao.com. • In general, I think Taobao.com is trustworthy.	Lim et al. (2006)