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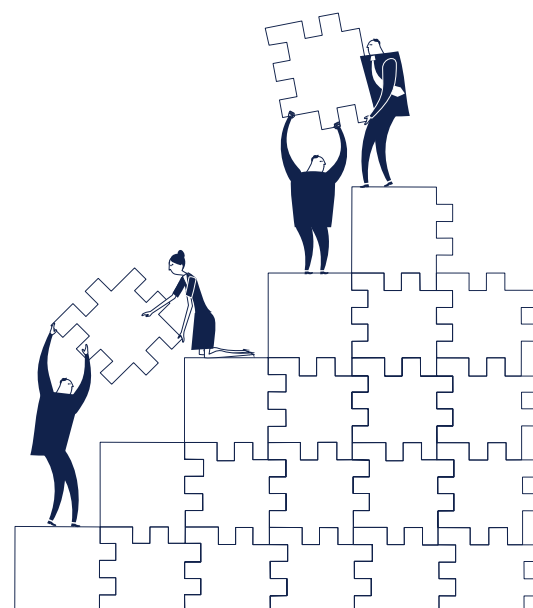
# In Mobile We Trust: How Mobile Reviews Can Overcome Consumer Distrust of User-Generated Reviews

Lauren Grewal

*Joseph M. Katz Graduate School of Business, University of Pittsburgh*

Andrew T. Stephen

*Saïd Business School, University of Oxford*



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**IN MOBILE WE TRUST: HOW MOBILE REVIEWS CAN OVERCOME CONSUMER  
DISTRUST OF USER-GENERATED REVIEWS**

**Lauren Grewal**

Doctoral Candidate

Joseph M. Katz Graduate School of Business, University of Pittsburgh  
Mervis Hall, Pittsburgh PA 15260, USA  
Email: lag107@pitt.edu

**Andrew T. Stephen**

L'Oréal Professor of Marketing  
Saïd Business School, University of Oxford  
Park End Street, OX1 1HP, UK  
Email: Andrew.Stephen@sbs.ox.ac.uk

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Lauren Grewal is a doctoral candidate at the Joseph M. Katz Graduate School of Business, University of Pittsburgh, Mervis Hall, Pittsburgh PA 15260, USA (lag107@pitt.edu). Andrew T. Stephen is the L'Oréal Professor of Marketing at the Saïd Business School, University of Oxford, Park End Street, Oxford OX1 1HP, UK (Andrew.Stephen@sbs.ox.ac.uk). The authors thank Dhruv Grewal and Yakov Bart for feedback on this research. This research was funded by the University of Pittsburgh and University of Oxford.

## **IN MOBILE WE TRUST: HOW MOBILE REVIEWS CAN OVERCOME CONSUMER DISTRUST OF USER-GENERATED REVIEWS**

In the context of user-generated content (UGC), mobile devices have made it easier for consumers to review products and services in a timely manner. In practice, some UGC sites differentiate between reviews posted from mobile versus non-mobile devices. For example, TripAdvisor uses a “via mobile” label to denote reviews from mobile devices. However, the extent to which such information impacts consumers is unknown. To address this gap, the authors use data from TripAdvisor and five experiments to examine how mobile impacts consumers’ perceptions of UGC reviews and their purchase intentions. They find that knowing that a review was posted from a mobile device leads consumers to perceive the review as more accurate, and, importantly, have higher purchase intentions. Interestingly, consumers assume that mobile reviews are more accurate due to the belief that writing reviews via mobile requires more effort and equate effort with the reviewer being more trustworthy. These effects are greater among skeptical consumers, implying that labeling of mobile reviews is a practice that can help overcome latent consumer distrust in UGC.

**Keywords:** Mobile Marketing, Online Reviews, User-Generated Content, Word of Mouth

The use of mobile devices has become ubiquitous in modern life. Over half the world's population now uses mobile devices; rightly making mobile the “defining technology of the age” (The Economist 2015). In the United States, for example, by early 2016, approximately 92% of the adult population used some type of mobile device, with 68% of those users having a smartphone (Miceli 2015; Poushter 2016). Additionally, the average American adult spends one-third of their waking hours on mobile devices (Chang 2015). Given the overwhelming prevalence of mobile technology, understanding, broadly speaking, how mobile is impacting people's perceptions of the world around them is an increasingly important research objective. However, despite the substantial amounts of time that many people spend using mobile devices, relatively little is known regarding the relationship between mobile devices and consumer behavior, and thus how managers can use this marketing channel to its full potential (Bart, Stephen, and Sarvary 2014; Fong, Fang, and Luo 2015; Grewal et al. 2016; Lamberton and Stephen 2016; Shankar et al. 2010).

A common consumer-related use of mobile devices is the sharing of information with other consumers by creating user-generated content (UGC) and disseminating it through online platforms and social media. This includes posts on networks such as Facebook and Twitter, sharing photos through apps such as Instagram, and rating and reviewing products and services on platforms such as Amazon, TripAdvisor, and Yelp. This latter type of UGC—ratings and reviews—is the focus of the current research. Specifically, we consider if it matters to consumers when they read UGC reviews whether or not a review was posted from a mobile device. While the type of device from which a consumer posts a review may seem inconsequential, we find this not to be the case. In fact, how consumers process and are influenced by UGC reviews can be affected by knowing whether or not the information was generated on a mobile device.

In examining how consumers process information contained in UGC reviews generated either on a mobile device (e.g., iPhone) or a non-mobile device (e.g., desktop or laptop computer), we find, interestingly, that knowing a review was written on and posted from a mobile device can make that review more persuasive and thus lead to higher levels of purchase intent. This is practically relevant, since consumers are often explicitly made aware of device type on popular UGC review sites. For instance, in early 2012 TripAdvisor started adding a “via mobile” label to reviews to indicate when they were posted from a mobile device (see Figure 1). Surprisingly, this seemingly innocuous information can affect the extent to which UGC reviews affect consumers’ product- or service-related purchase intentions. Particularly for consumers who have some doubts about the credibility of UGC reviews (e.g., due to inherent skepticism or because they have read press reports about “fake” reviews online), we find that knowing that a review came from a mobile device can help in overcoming their latent distrust. This effect occurs because consumers think that it takes more effort to generate reviews on mobile devices, which in turn leads them to believe that mobile review writers are more trustworthy, which in makes them think that the information contained in the review is more likely to be accurate.

This research makes a number of contributions to the literature on online WOM and UGC, and to the burgeoning literature on mobile marketing. First, we contribute to the work on online WOM and UGC by focusing on an important but unexplored factor in influencing consumer attitudes and behaviors—the type of device (mobile vs. non-mobile) on which a UGC review was apparently generated. As there is only a fairly recent exploration of the psychological processes that underlie the creation or evaluation of online WOM (Berger 2014; Berger and Schwartz 2011; Cheema and Kaikati 2010; Lamberton and Stephen 2016; Melumad, Inman, and Pham 2016; Stephen 2016), we add to this literature by showing how the knowledge that UGC

reviews were generated on mobile devices can impact managerially relevant consumer intentions such as purchase consideration. Second, our findings provide insights to managers and review-oriented platforms regarding the impact of explicitly indicating to people the type of device from which a review was posted. When made explicit, this can affect consumers' downstream attitudes and behavioral intentions. This is particularly the case among skeptical consumers who have a general distrust in UGC reviews. Finally, we add to the growing body of research on various facets of mobile marketing (Bart, Stephen, and Sarvary 2014; Chae and Kim 2004; Ghose, Goldfard, and Han 2013; Luo et al. 2013; Raptis et al. 2014). Unlike prior work, which has mostly considered the nature of specific types of mobile content (e.g., advertising) or the effects of mobile-only advertising targeting capabilities such as geo-fencing, the current research examines what consumers infer about information when they know it comes from a mobile device. Interestingly and surprisingly, in the case of UGC reviews this contextual aspect can have important consequences for consumer decision making.

## CONCEPTUAL FRAMEWORK

Previous research regarding online WOM has focused on a number of factors such as sales, diffusion, product demand, and other marketing performance measures (Bruce, Foutz, and Kolsarici 2012; Chevalier and Mayzlin 2006; Godes and Mayzlin 2004; Liu 2006; Trusov et al. 2009; Van den Bulte and Lilien 2001; Villanueva, Yoo, and Hanssens 2008).<sup>1</sup> One type of WOM communication of interest is UGC reviews as it has become a highly popular consumer information source. As a type of online WOM, UGC reviews have been shown to influence

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<sup>1</sup> A number of review papers also consider online WOM and UGC: e.g., Berger (2014), Floyd et al. (2014), Lamberton and Stephen (2016), Babić et al. (2016), Stephen (2016), and You, Vadakkepatt, and Joshi (2015).

consumer's product evaluations and product sales (Chevalier and Mayzlin 2006; Godes and Mayzlin 2004; Liu 2006; Tirunillai and Tellis 2012).

Prior work has established that consumers' opinions, expressed through UGC reviews, can have a strong influence on consumer decision making (Zhu and Zhang 2010), as indicated by the influence of UGC reviews on consumers' purchase intentions and willingness to pay for reviewed products and services (Ba and Pavlou 2002; Houser and Wooders 2006). Consumers' opinions expressed in UGC reviews are positioned as a credible source of product- or service-related information, because they apparently reflect opinions of real people who have experienced the reviewed product or service (Bickart and Schindler 2001; Sher and Lee 2009). However, this has been shown to not always be the case and many consumers are at least somewhat skeptical of the validity of UGC reviews. For example, over 40% of consumers in a survey reported some level of doubt in the credibility of UGC (Sterling 2013), and concerns are fueled by reports of firms posting "fake" or misleading positive reviews, trying to delete negative reviews, or otherwise attempting to manipulate consumers into making positive statements that may not be truly representative of their opinions (Mayzlin, Dover, and Chevalier 2014; The Economist 2015). Also, some consumers may believe that positive reviews are biased due to reviewers receiving incentives such as discounts and free products (Du Plessis et al. 2016).

Regardless of the source of distrust, at question is the perceived accuracy of UGC reviews, which hinges on how much a consumer may trust a reviewer and think that the reviewer is being honest. Accuracy—which represents the extent to which a review is thought to include correct information—must be perceived (at least at some acceptable level) if a consumer is to be willing to use that review when making a purchase decision. If a consumer reading a review lacks information about a reviewer's motives or thinks they might be biased or dishonest, they

doubt the trustworthiness of the reviewer (Du Plessis et al. 2016), which subsequently lowers the perceived accuracy of the review. Accordingly, reviews perceived as less accurate are likely to be less persuasive or influential on decisions.

To overcome this, we posit that a skeptical consumer's doubt about the credibility of a (positive) UGC review can be positively affected by the knowledge of the type of device from which the UGC was generated, which in turn will affect how accurate they think the information is and, ultimately, how much influence that review has. Specifically, we argue that knowing a review came from a mobile device can lead consumers to perceive that reviewer as more trustworthy, and in turn they are likely to deem the information to be more likely to be accurate and, therefore, the review will be more influential in terms purchase decision-making.

We posit that this higher perceived accuracy is due to a consumer assumption, or lay belief, that associates greater perceived review accuracy with greater reviewer trust, which interestingly comes from the perceptions of extra effort required in the review-generation process when a review is written via a mobile device. Due to the nature of mobile devices, such as iPhones, physically typing a well-crafted review typically requires more effort than typing the same text on a non-mobile device with a larger keyboard. This is consistent with prior studies (Chae and Kim 2004; Raptis et al. 2013; Sweeney and Crestani 2006) that link smartphone characteristics such as smaller device size, less visible screens, and smaller keyboards to increased physical and cognitive effort requirements when using a mobile device versus a non-mobile device such as a desktop or laptop computer. Additionally, although somewhat less directly, the idea that using a mobile device to complete a particular task requires more effort—or is costlier—is generally related to work by Ghose et al. (2013), who find that a consequence



of smaller screen sizes with mobile devices is consumers facing higher search costs (implying more effort is expended) in the context of internet search behavior.

We hypothesize that the belief consumers have about the extra effort normally required when writing reviews on mobile devices leads them to think that, compared to reviewers posting from non-mobile devices, reviewers posting from mobile devices are more likely to write a review that is reflective of their true consumption experience and, hence, are more accurate in the review. The main reason for an increased perception of review accuracy, particularly in a world where “fake” reviews are thought to be fairly commonplace, is that the belief that the increased effort required to write a mobile review serves as an effort-related deterrent or “barrier to entry” to would-be unscrupulous “fake” or dishonest reviewers. Trust has been shown to influence consumers’ attitudes and behaviors in various online contexts (Bart et al. 2005; McKnight, Choudhury, and Kacmar 2002), and trust in a source of information (e.g., a reviewer, a service provider, a brand) stems from the expectation that the source is credible (Morgan and Hunt 1994). This can be inferred from various cues. For instance, when there is a cue that suggests that online content was effortful to generate (e.g., high quality content; Corbitt, Thanasankit, and Yi 2003), prior research has shown that this increases trust in the source that leads to more ecommerce purchasing. Cues that signals this, directly or indirectly, might also help establish a reviewer’s trustworthiness. Review-writing effort, expected to be higher on mobile versus non-mobile devices, is hypothesized to be a trust-establishing factor. Because of the extra effort required to write a quality mobile review, consumers might expect there to be less likelihood for inaccurate or deceptive reviews coming from mobile devices since they are costlier to generate. Put another way, given that generating a UGC review on a mobile device requires more effort, consumers might be generally more inclined to trust mobile reviewers

because the higher effort requirement serves as a mechanism that raises the “barrier to entry” for writing a review and thus “keeps out” those reviewers who might have less-than-honorable intentions (and thus be less trustworthy).

Trust is closely associated with perceived accuracy (Golbeck and Hendler 2006). In our conceptualization, the perceived accuracy (i.e., correctness) of UGC reviews is a *consequence* of perceived trust in the reviewer. That is, if a consumer *trusts* a reviewer they should consequently have some faith in the accuracy of the review. This could conceivably go the other way around (i.e., if some information is believed to be accurate then one is more inclined to deem the source of that information to be trustworthy), although we argue and empirically demonstrate that this is not the case. In our setting, consumers are ultimately trying to determine if *information* (review, not reviewer) is likely to be sufficiently accurate to influence their decisions by appraising the quality of the information in the review. We suggest that this can come from determining the extent to which the *source* (i.e., reviewer) is sufficiently credible and thus trustworthy.

These arguments linking effort, trust in the reviewer, and accuracy of the review are based on a consumer lay theory that connects these inferences and perceptions (hereafter referred to as the “effort-trust-accuracy” lay theory). If this lay theory underpins the process through which knowing that a UGC review came from a mobile device makes that review more persuasive and influential, this effect should be stronger among skeptical consumers who worry about and doubt the trustworthiness of UGC reviewers. For consumers who already believe that UGC is trustworthy, an indication of mobile is less likely to change their purchase intentions as they are not the consumer base who needs to be convinced of a reviews’ accuracy. However, for consumers who are skeptical of UGC due to doubts relating to the truthfulness and accuracy of a review, a cue like device type that would trigger their effort-trust-accuracy lay belief may be

very influential. Skeptical consumers have been shown to be influenced more from held stereotypes or innate beliefs rather than argument quality (Sher and Lee 2009). In this context, this implies that subtle cues (e.g., a “via mobile” label on a UGC review) conceivably could trigger held beliefs (e.g., the lay theory linking effort and accuracy) that will influence consumers’ judgments.

A caveat to the above arguments, however, is that we only expect this pattern of effects when a review is not negative; i.e., positive valence, although not necessarily strongly positive. Valence is an important factor in the online WOM and UGC literature, and there are mixed findings. For example, some studies show a positivity bias suggesting that more positive reviews are more impactful or more helpful (Carlson, Guha, and Daniels 2011), whereas other research suggests the opposite, i.e., a negativity bias (Basuroy, Chatterjee, and Ravid 2003; Chevalier and Mayzlin 2006). In our case, we only expect mobile reviews to be more impactful on purchase intentions when reviews are at least *mildly* positive because this is when doubts about reviewer trustworthiness and skepticism around review accuracy are likely to be more important to consumers faced with a product/service decision. If a consumer takes a positive review at face value and decides to make a purchase but it is inaccurate, a “false positive” decision is made (and money wasted). This is typically worse than a “false negative” where a negative review is believed and a purchase thus avoided.

We believe that this positive effect of a “mobile” indication for a UGC review is due to our proposed “effort-trust-accuracy” lay-theory. However, we acknowledge (and later empirically rule out) a plausible alternative explanation related to temporal proximity. Mobile devices allow people to post reviews “in the moment” such that the opinions expressed *can be* more temporally proximate to the reviewed experience. This is particularly true for services (e.g.,

hotel stays, restaurant visits). Presumably, consumers might possess a lay belief that the greater temporal proximity afforded by mobile devices might mean greater review accuracy, perhaps because there is less of a chance of forgetting between the time of the experience and the time of writing the review. Mobile devices, unlike traditional computers, are always accessible to consumers. Interestingly, in two of our studies we rule this out as a competing mechanism. In fact, a lay belief about mobile reviews being more temporally proximate to an experience does not appear to exist.

[INSERT FIGURE 2 ABOUT HERE]

We provide a summary of our conceptual framework in Figure 2. To summarize, we posit that the type of device, mobile or non-mobile, from which a UGC review was posted can affect consumers' judgments and behavioral intentions regarding the reviewed product or service. Knowing a positive review was from a mobile device, compared to from a non-mobile device such as a desktop or laptop computer, will lead to *higher* purchase intentions for the reviewed product or service. This is because consumers believe that the nature of mobile devices (e.g., smaller screens and keyboards) increases the effort required to write a review, which is conflated with greater trustworthiness in the reviewer as the information source. Once a reviewer is seen as being more trustworthy, the perceived review accuracy will be greater as trust in the reviewer leads consumers to believe that the information is more likely to be accurate. Additionally, we expect this increased accuracy to be especially effective in influencing purchase considerations for consumers who are skeptical about UGC, because this mechanism is based specifically on inferences made about reviewer trustworthiness and review accuracy that render reviews more or less influential on consumers' attitudes. Thus, we propose that mobile reviews can help

consumers overcome skepticism that would otherwise lead them to discount a reviewer's favorable opinion, thereby allowing the review to have a stronger persuasive effect.

## **OVERVIEW OF STUDIES**

We test our conceptual framework using a combination of real-world data and experiments across six studies. Study 1 uses data from the popular travel-related UGC platform TripAdvisor to test whether the explicit indication that a review was written on a mobile device (i.e., a "via mobile" label) impacts a common proxy for consumers' perceptions of review accuracy: how many "helpful" votes a review receives. Across multiple US hotel markets and millions of reviews, we find that "via mobile" reviews are voted as more helpful, as predicted.

Studies 2 and 3 experimentally test our conceptualization and introduce purchase intention as a relevant outcome. Additionally, Study 3 considers the moderating role of consumer skepticism in UGC reviews, finding that the positive effect of a "via mobile" indication on purchase intentions is, as expected, stronger among more skeptical consumers.

Finally, Studies 4, 5, and 6 provide further experimental tests of our framework, specifically focusing on the mediating role of the "effort-trust-accuracy" lay theory that leads consumers to infer that reviews from mobile devices are more accurate because they require more effort to write. Consistent with our predictions, a "via mobile" indication on a review leads to enhanced perceptions of review-writing effort and review accuracy. Additionally, we demonstrate this mechanism is related to effort by showing that when consumers are told that mobile reviews require no more effort to write than non-mobile reviews, the positive effect of mobile reviews on accuracy and, in turn, purchase consideration, goes away.

## STUDY 1

The purpose of Study 1 is to test a central hypothesis in our conceptual framework—that reviews written on and posted from mobile devices are judged more favorably by consumers—using real-world UGC review data. For this we collected data from TripAdvisor, a travel-related review platform and the world’s largest travel site with approximately 350 million monthly users (TripAdvisor 2015). Importantly, for our purposes, for each review on TripAdvisor the site indicates if the review came from a mobile device with the label “via mobile” displayed on the review (see Figure 1). Our data includes approximately 1.5 million UGC reviews for hotels in the twelve largest hotel markets in the US over three years. We find that reviews marked with the “via mobile” label have a significantly higher proportion of “helpful” votes, which we use as a proxy for TripAdvisor users’ favorable perceptions of those reviews and, more specifically, as indicators of higher perceived review accuracy and trust in the review.

### *Data*

Our dataset includes all publicly available UGC reviews on TripAdvisor.com posted between February 2012 and September 2015 for hotels located in the top 12 cities in the US by hotel room volume (e.g., New York, Las Vegas, Chicago, Boston). Our data start in February 2012 because this is when TripAdvisor first started publicly applying the “via mobile” label reviews that were posted from mobile devices. Our analysis is based on 1,547,219 reviews for 2,379 hotels. For each review we have whether the “via mobile” label was present or absent and the helpfulness rating (i.e., number of times the review, at the time of data collection, had been voted as “helpful” by TripAdvisor users).

In addition to these variables, which are the independent and dependent variables, respectively, we collected a number of other variables: (i) the rating given by the reviewer (1 to 5; with 5 the most positive;  $M = 4.06$ ,  $SD = 1.07$ ; 90.59% above “2” and 76.42% above “3”), (ii) hotel name and location, (iii) review date, headline, and full text, (iv) whether the hotel responded to the review, (v) whether the reviewer was recognized as a “Top Contributor” by TripAdvisor, (vi) the number of reviews the reviewer had written at the time data collection, (vii) the number of helpful votes the reviewer had received across all their reviews at the time of data collection, and most importantly (viii) whether the review was labeled “via mobile” or not. Web Appendix A includes details of where these variables come from on a screenshot of a TripAdvisor review.

### *Analysis and Results*

First, we looked for model-free evidence in support of our prediction that “via mobile” reviews should receive more helpfulness votes, on average, than reviews without this label. In this dataset of over 1.5 million reviews, only 6.89% of them had the “via mobile” label. Thus, if there is an effect of the presence of this label on the number of helpful votes received by reviews, it is likely to be small. This appeared to be the case. The average number of helpfulness votes received by a review *without* the “via mobile” label ( $M = .92$ ,  $SD = 1.55$ ) was slightly less than the average for reviews with the “via mobile” label ( $M = .94$ ,  $SD = 1.49$ ). Removing outliers (number of helpfulness votes above the 99<sup>th</sup> percentile) did not alter this pattern ( $M_{\text{mobile}} = .86$ ,  $SD_{\text{mobile}} = 1.19$  vs.  $M_{\text{non-mobile}} = .83$ ,  $SD_{\text{non-mobile}} = 1.18$ ).

Next, we estimated a series of regression models to test our predictions. Since our dependent variable is helpfulness, measured as the number of helpful votes received for a review, we used a negative binomial regression model for count data to test the effect of the presence or

absence of the “via mobile” label on helpfulness. We also controlled for certain review and reviewer characteristics as described above. The regression results are consistent with our prediction that the presence of the “via mobile” label is associated with a greater number of helpfulness votes.

In a base model without control variables the effect of mobile on helpfulness was positive and significant ( $b = .024$ ,  $\chi^2 = 25.06$ ,  $p < .001$ ). Adding control variables to the base model that could also conceivably affect helpfulness (rating, review length, whether the hotel responded) did not change this result ( $b = .027$ ,  $\chi^2 = 33.36$ ,  $p < .001$ ). Finally, we added additional controls for reviewer heterogeneity since some reviewers might be better (more helpful) than others. We used the reviewer’s mean helpfulness score as a covariate and the effect of “via mobile” on helpfulness remained positive ( $b = .022$ ,  $\chi^2 = 28.40$ ,  $p < .001$ ). For robustness, we also ran Poisson regressions, which provided consistent results but had inferior fit compared to the negative binomial regressions.

In summary, these results provide initial real-world support for a key part of our conceptual framework. We do acknowledge, however, that the effect of the “via mobile” label on helpfulness votes appears to be fairly small (e.g., for the full model, mobile reviews get about 2% more helpfulness votes than non-mobile reviews). This, however, is not surprising given the small physical size of this label (see Figure 1) and the many other cues present in this real-world setting. Of course, these findings could be due to various alternative explanations, particularly given that there might be differences between mobile versus non-mobile reviews for the same hotel that drive perceived helpfulness (e.g., differences in the review text itself that are due to differences in device type).<sup>2</sup> We address this in the subsequent studies, all of which are

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<sup>2</sup> See Melumad et al. (2016) for an examination of how device type affects review text.



randomized experiments where the review text is held constant and all that varies is the presence or absence of a “via mobile” label to indicate whether or not a review purportedly was written on a mobile or a non-mobile device.

## STUDY 2

Study 2 uses an experiment to examine whether the impact of knowing a UGC review was written on a mobile device increases purchase consideration for the reviewed product or service. Whereas Study 1 was based on hotel reviews, here we use restaurant reviews. Importantly, this study conceptually replicates the previous finding that knowing a review was from a mobile device leads to an increase in consumers’ favorable attitudes toward a review. In this case, we capture this through seeing changes in purchase intention for the reviewed restaurant. This is based on the logic that, for a positive review, we should see an increase in purchase consideration associated with a more favorable attitude toward the review. Critically, unlike in the previous study where differences in the content of reviews could be an alternative explanation for the results, in this study (and all subsequent studies) participants in all conditions viewed the same review. All that varied was the presence of the label “via mobile” in the mobile condition, versus the presence of the label “via desktop” in the non-mobile condition.

### *Method*

Eighty Amazon Mechanical Turk members who reported owning a mobile device such as a smartphone participated in this survey for nominal payment ( $M_{\text{age}} = 35.05$ , 45% female). The restaurant used in the stimuli was in Boston, so we also restricted participant recruitment to people who had not been to Boston to reduce the likelihood of participants having prior

knowledge of or familiarity with the restaurant. Participants were randomly assigned to one of two conditions (mobile, non-mobile) in a between-subjects design. Eight participants were dropped because they did not pass an attention check towards the end of the study that asked them to recall if the review they read was either “via mobile” or “via desktop.” This left us with data from 72 participants.

Participants were informed that they would engage in a task that was concerned with how mobile devices are used for online behavior. To make this task appear as realistic as possible and in support of this cover story, we first asked participants a number of general questions about owning a mobile device (i.e., if they owned a device and if so, what type of mobile device; participants who did not own a mobile device were screened out of the study), their daily behavior for engaging with social and digital media through their devices (i.e., percentage of time spent online daily is via a mobile device versus a non-mobile device like a desktop), and whether or not their mobile devices are ever used for reading or writing online reviews.

Participants then completed a “Restaurant Review Task” (see Web Appendix B for the instructions). We told participants that they would see a user-generated review taken from TripAdvisor.com for a restaurant located in the Boston area, be asked to read this review, and answer some questions about it. In both conditions the same review, which was moderately positive, was shown. No reviewer information was provided, and the only difference between the review stimuli across conditions was the label indicating from which type of device the review was posted. In the mobile condition the label said “via mobile,” identical to what actually appears on TripAdvisor. In the non-mobile condition, the label said “via desktop” (see Figure 3 for review stimuli), which we use to reduce ambiguity in the non-mobile condition (which could

otherwise confound this manipulation if there was no such label in the non-mobile condition, since in the mobile condition the generation source is not ambiguous).

[INSERT FIGURE 3 ABOUT HERE]

After reading the review, participants were asked to imagine that they were planning a visit to Boston and needed to find a breakfast restaurant. We then asked them to indicate how likely they would be to eat at this restaurant (1 = Not at all Consider, 5 = Definitely Would Consider). Finally, we asked an attention check question used to clean our data (e.g., the type of device from which the review was written; exact item in Web Appendix C) and standard demographic questions.

### *Results and Discussion*

To test our prediction that purchase consideration should be higher in the mobile condition we regressed purchase consideration on a dummy variable for experimental condition (mobile = 1, desktop = 0). Results are in line with our prediction. There was a significant positive effect of mobile ( $b = .44$ ,  $t = 2.10$ ,  $p = .04$ ) such that participants who saw the “via mobile” label were more likely to consider eating at the restaurant ( $M = 3.60$ ,  $SD = .83$ ) than those who saw the “via desktop” label ( $M = 3.25$ ,  $SD = .79$ ).

This finding is conceptually consistent with the main finding from the TripAdvisor data in Study 1 in the sense that more favorable attitudes toward a review, perhaps because a reviewer is more trusted and the review is perceived as more accurate, should be associated with higher purchase intent or purchase consideration. In the next study we further consider this effect, focusing on the predicted moderating role of consumer skepticism for online reviews.

## **STUDY 3**

Study 3 builds on the previous findings by exploring the moderating role of consumer skepticism for UGC reviews. As we argued earlier, and indirectly empirically showed in Study 1, if the positive effect of knowing a review came from a mobile device on either favorable attitudes toward a review or, more importantly, purchase consideration, operates through an effort-trust-accuracy mechanism, then we would expect consumer skepticism of UGC accuracy to be a moderating factor. If people are generally skeptical of UGC reviews, then an information signal that results in a review being more influential or persuasive should have that effect because it alters accuracy perceptions and, to some extent, overcomes skepticism. Despite online reviews supposedly being trustworthy (Bickart and Schindler 2001; Sher and Lee 2009), there is a large amount of skepticism. For example, studies have shown at least 40% of consumers having some level of doubt in the accuracy of online reviews (Sterling 2013), which likely fosters skepticism, particularly for positive reviews (Chatterjee 2001; Sher and Lee 2009).

### *Method*

Eighty-seven undergraduate students at a large university in the northeastern United States ( $M_{\text{age}} = 20.27$ , 37% female) participated in this study as part of a lab session in which multiple unrelated studies were run in exchange for course credit. We randomly assigned participants to one of two conditions (mobile, non-mobile) in a between-subjects design. Seventeen participants were dropped because they either did not pass the attention check at the end of the survey asking them if the review they saw was “via mobile” or “via desktop,” or because they had previously traveled to and had preferences for the focus of our stimuli (hotels in New Orleans). This left us with data from 70 participants.

As in Study 2, at the beginning of the study we asked participants questions about mobile device use. Here, we also measured consumer skepticism toward UGC reviews using a nine-item scale that we adapted from a skepticism scale introduced by Obermiller and Spangenberg (1998;  $\alpha = .93$ ; e.g., “I do not trust online user-generated reviews” and “A lot of online user-generated reviews are fake”; see Web Appendix D for all items).

Participants were then asked to complete a “Hotel Review Task,” which was very similar to the task used in the previous study. Specifically, we told participants that they would see a user-generated review taken from TripAdvisor.com for a hotel located in the New Orleans area, be asked to read this review, and answer some questions about it. In both conditions the same review was shown. This was an actual TripAdvisor review selected because it was emotionally neutral, moderately positive (4 out of 5 stars), and of a normal length. No reviewer information was provided, and the only difference between the review stimuli across conditions was the label indicating from which type of device the review was posted. In the mobile condition the label said “via mobile,” identical to what actually appears on TripAdvisor. In the non-mobile condition, the label said “via desktop” (see Figure 3 for stimuli).

After reading the review, participants were asked to imagine that they are planning a visit to New Orleans and were considering hotels. We then asked them to indicate how likely they would be to stay at this hotel, assuming that price was equivalent to other similar hotels nearby (1 = Not at all Consider, 5 = Definitely Would Consider). Finally, we asked the same attention check as in Study 2 (e.g., the type of device from which the review was written), whether they had previously traveled to and had preferences for the focus of hotels in New Orleans, and standard demographic questions.

### *Results and Discussion*

First, we sought to replicate the main finding from Study 2. To test our prediction that purchase consideration of the hotel would be higher for participants who saw the indication that the review had been written from a mobile device than for those who saw the review was written from a non-mobile device, we regressed purchase consideration on a dummy variable for condition (mobile = 1, desktop = 0). As in Study 2, we found a significant positive effect of “via mobile” on purchase consideration ( $b = .450, t = 2.28, p = .026$ ). Participants in the mobile condition were more likely to consider staying at the hotel ( $M = 3.50, SD = .85$ ) than those in the non-mobile condition ( $M = 3.05, SD = .78$ ).

Next, we tested whether measured consumer skepticism in UGC reviews moderated this effect. The nine items used to measure skepticism were averaged to form a single item. This was then used in a regression analysis with purchase consideration regressed on condition, skepticism, and their interaction. As can be seen in Figure 5, the interaction was significant ( $b = .40, t = 1.98, p = .05$ ). A spotlight analysis then revealed that at higher levels of skepticism (1 SD above the mean) there was a significant difference between mobile and non-mobile reviews, such that participants who saw the mobile review had significantly higher purchase considerations ( $M = 3.67, SD = .77$ ) than those who saw the same review but believed it was written via the non-mobile device ( $M = 3.16, SD = .60; b = .51, t = 2.25, p = .03$ ). However, at lower levels of skepticism (1 SD below the mean) the difference between conditions was not significant ( $M_{\text{mobile}} = 3.25, SD_{\text{mobile}} = .75$  vs.  $M_{\text{non-mobile}} = 2.95, SD_{\text{non-mobile}} = 1.02; b = .30, t = .878, p = .35$ ).

[INSERT FIGURE 4 ABOUT HERE]

These findings demonstrate that, for skeptical consumers, indicating a positive UGC review was written on a mobile device instead of a non-mobile device can seemingly alleviate underlying concerns about review accuracy and reviewer trustworthiness, which in turn appears

to result in the review being more persuasive. As we argued earlier, if the underlying mechanism is related to inferences about how accurate a review is, then this effect should be stronger among more skeptical consumers for whom review accuracy is a potential concern. This appears to be the case, at least indirectly, in these findings. The next study examines this mechanism directly.

## STUDY 4

Study 4 focuses on testing the mediating role of accuracy. Building on the findings in the previous study related to the moderating effect of skepticism, here we test the complete hypothesized conceptual framework. As predicted, our findings show that knowledge that a review was from a mobile device leads to an increase in purchase consideration for the reviewed product/service because of an increase in perceived review accuracy. Consistent with Study 3, however, this is particularly the case for consumers who have higher levels of skepticism in the accuracy and trustworthiness of UGC reviews. Also, in this study we rule out an alternative explanation we mentioned earlier, that consumers are more influenced by mobile reviews because they believe that mobile reviews are written more temporally proximate to the reviewed experience.

### *Method*

The design of this study is similar to the previous experiments. Eighty-nine members of Amazon Mechanical Turk participated in this study for nominal compensation ( $M_{\text{age}} = 33.38$ , 46% female). Participants were randomly assigned to one of two conditions (mobile, non-mobile) in a between-subjects design. After dropping participants who did not pass the attention and manipulation checks used previously, we used data from 68 participants.

As in Studies 2 and 3, first participants answered a number of general questions about mobile device use. They also completed the same skepticism scale used in Study 3 at this stage. We then asked participants to complete the “Hotel Review Task,” which used the same New Orleans hotel review from Study 3 and measured purchase consideration in the same way. Following this, we measured the mediator, perceived review accuracy, using six items on seven-point Likert scales ( $\alpha = .90$ ; e.g., “The information in this review was correct”; see Web Appendix E for items). We then measured another potential mediator that we sought to rule out as an alternative explanation—how soon after the reviewer’s hotel stay they thought the review was written. As mentioned earlier, we considered that a competing explanation could be based on the possibility that reviews from mobile devices are thought to be more temporally proximate to the reviewed experience (i.e., written closer in time because mobile devices allow for reviews to be posted more easily “in the moment” or sooner thereafter). To measure this, participants indicated the extent to which they believed that the review was written in a timely manner following the reviewed hotel experience (1 = while the reviewer was still at the hotel, 2 = within a few hours of leave, 3 = within a day of leaving, 4 = within a few days of leaving, 5 = within a week of leaving, 6 = within a few weeks of leaving, and 7 = within a month of leaving the hotel). Finally, we had participants complete the same manipulation and attention check questions, and basic demographic questions, as in Studies 2 and 3.

### *Results and Discussion*

First, we tested the moderated mediation hypothesis implied by our conceptualization. Consistent with our theory, there was a positive effect of mobile versus non-mobile on perceived accuracy ( $M_{\text{mobile}} = 5.34$ ,  $SD_{\text{mobile}} = .84$  vs.  $M_{\text{non-mobile}} = 4.90$ ,  $SD_{\text{non-mobile}} = .79$ ;  $b = .22$ ,  $t = 2.06$ ,  $p = .044$ ). Thus, in line with findings from Studies 1 and 2, it appears that the more favorable



attitude toward a “via mobile” review is due to the perception that it is more accurate than a review that is not from a mobile device. Importantly, consistent with our prediction that mobile reviews increase purchase intent through increased perceived review accuracy—particularly among more skeptical consumers—a conditional indirect effects analysis (Hayes 2013, model 14) demonstrated that perceived accuracy mediates the effect of “via mobile” on purchase consideration when skepticism is higher. The indirect effect of knowing a review was written on a mobile versus a non-mobile device on purchase intention, through perceived review accuracy, was positive and significant but only at higher (1 SD above the mean) levels of skepticism ( $b = .08$ ,  $SE = .05$ , 95%  $CI = [.01, .22]$ ). Conversely, when skepticism was lower (1 SD below the mean), this indirect effect was not significant ( $b = -.02$ ,  $SE = .05$ , 95%  $CI = [-.13, .07]$ ).

Second, we sought to rule out a potential alternative mechanism based on perceived differences in temporal proximity. As mentioned earlier, people might believe that reviews from mobile devices are written closer in time to the actual experience than reviews from non-mobile devices. Presumably, a review written soon after an experience, for example, might be more influential because there has been less time in which a reviewer could forget salient details. Despite this seemingly logical possibility, there was no evidence in our data to suggest that the mobile versus non-mobile manipulation caused a difference in perceived time between the experience and writing the review ( $b = .02$ ,  $t = .31$ ,  $p = .76$ ). This measure was also not highly correlated with perceived accuracy ( $r = -.18$ ,  $p = .17$ ), which suggests that the review was not perceived as more accurate because of any differences in this time-related perception.

This study found empirical support for our conceptual framework by demonstrating that positive UGC reviews written on and posted from mobile devices are more influential on consumer decision making because mobile reviews are thought to be more accurate. Importantly,

this is particularly true for consumers who have higher levels of skepticism toward UGC reviews because their natural inclination is to question or doubt review accuracy. Interestingly, and importantly, this accuracy-inference process is not related to any perceived greater temporal proximity to the experience for a review written on a mobile device. Here we found no evidence to suggest that consumers believe mobile reviews are written more “in the moment” than non-mobile reviews. If that was the case, however, this would explain the higher perceived accuracy. Instead, as we argued earlier and show in the next study, the greater perceived accuracy attributed to mobile reviews derives from consumers’ lay beliefs about the greater level of effort required when writing a review on a mobile device.

## **STUDY 5**

One assumption about mobile reviews that may alleviate skeptical consumers’ concerns with UGC is the belief that reviews posted from mobile devices require more effort to produce. Previous research has shown that mobile devices force consumers to use more physical and cognitive effort compared to computers (Chae and Kim 2004; Raptis et al. 2013; Sweeney and Crestani 2006). The extra effort required when writing a review on a mobile device should therefore lead consumers to believe that, compared to reviews from non-mobile devices, reviews posted from mobile are more reflective of a reviewer’s true consumption experience and thus more trustworthy (Ghose, Goldfarb, and Han 2013; Walther and Bunz 2005). This perceived trustworthiness in turn increases the credibility of the online review, which has been shown to be a key signal that content is more accurate (Mizerski 1982). In this study, we directly examine the proposed effort-trust-accuracy link that is part of our conceptualization.

### *Method*

One hundred and eighty members of Amazon Mechanical Turk participated for nominal compensation ( $M_{\text{age}} = 33.57$ , 48% female). Participants were randomly assigned to one of two conditions (mobile, non-mobile). After dropping participants who did not pass the same attention checks used in the previous studies (i.e., visiting NOLA and remembering the device that the review came from), we used data from 159 participants.

As in previous studies, all participants were first asked a number of general questions about their mobile device use. Participants then completed a slightly modified version of the “Hotel Review Task” used in Studies 3 and 4. As before, they were exposed to the same New Orleans hotel review and the same manipulation of mobile versus non-mobile. However, in this study we did not measure purchase consideration. Instead, after reading the review we measured perceived review accuracy using the same items as in Study 4 ( $\alpha = .90$ ). We then measured participants’ perceptions of the review-writing effort and the perceived trust in the reviewer. Effort was captured with six items ( $\alpha = .88$ ; e.g., “The reviewer put a lot of effort into writing this review”). Trust was captured also with six items ( $\alpha = .85$ ; “The reviewer can be trusted”; see Web Appendix F for all items). As in Study 4, in this study, we additionally measured the perceived temporal proximity between the hotel experience and the review writing experience on the same 1-7 scale. Lastly participants were asked attention check and standard demographic questions from previous studies.

### *Results and Discussion*

Following our conceptual framework (see Figure 2), we predicted that mobile reviews, compared to non-mobile reviews, should increase first the perceived effort that went into writing the review, and second, the level of trust in the review. In line with this, there was a positive

effect of mobile versus non-mobile on perceived review-writing effort ( $M_{\text{mobile}} = 4.73$ ,  $SD_{\text{mobile}} = .88$  vs.  $M_{\text{non-mobile}} = 4.32$ ,  $SD_{\text{non-mobile}} = 1.07$ ;  $b = .42$ ,  $t = 2.61$ ,  $p = .01$ ). Similarly, there was a positive effect of mobile versus non-mobile on trust in the reviewer ( $M_{\text{mobile}} = 5.31$ ,  $SD_{\text{mobile}} = .83$  vs.  $M_{\text{non-mobile}} = 5.05$ ,  $SD_{\text{non-mobile}} = .78$ ;  $b = .25$ ,  $t = 1.96$ ,  $p = .05$ ).

We then tested formally our serial mediation hypothesis that effort led to trust, which in turn led to accuracy. For this we used a conditional indirect effect analysis (Hayes 2013, model 6) for the effect of mobile versus non-mobile on perceived review accuracy mediated by, first, perceived effort, and second, trust in the reviewer. The results supported this process: (i) mobile had a positive effect on review-writing effort ( $b = .42$ ,  $SE = .16$ , 95% CI = [.10, .73]); (ii) effort had a positive effect on review trustworthiness ( $b = .51$ ,  $SE = .05$ ; 95% CI = [.42, .61]), and (iii) trust had a positive effect on perceived review accuracy ( $b = .74$ ;  $SE = .07$ ; 95% CI = [.60, .89]). Critically, the indirect effect of the hypothesized serial mediation pathway was also positive and significant ( $b = .16$ ;  $SE = .06$ ; 95% CI = [.05, .29]). Importantly, the other indirect pathways in this model (i.e., from mobile to accuracy through either effort (95% CI = [-.00, .11]) or trust (95% CI = [-.17, .14]), as single mediators) both were not significant. Finally, when we switched the order of the two mediators (i.e., mobile  $\rightarrow$  trust  $\rightarrow$  effort  $\rightarrow$  accuracy, instead of the conceptualized mobile  $\rightarrow$  effort  $\rightarrow$  trust  $\rightarrow$  accuracy), the indirect effect of mobile on accuracy was not significant ( $b = -.01$ ;  $SE = .01$ ; 95% CI = [-.06, .01]); see Table 1).

[INSERT TABLE 1 HERE]

Lastly, we sought to again rule out a potential alternative mechanism based on perceived differences in temporal proximity. As in study 4, there was additionally no evidence in our data to suggest that the mobile versus non-mobile manipulation caused a difference in perceived time between the experience and writing the review ( $b = -.03$ ,  $t = -.19$ ,  $p = .85$ ). This measure was also

not highly correlated with perceived effort ( $r = .03, p = .73$ ), reviewer trust ( $r = .01, p = .90$ ), or review accuracy ( $r = -.05, p = .54$ ). These results again suggest that the review was not perceived as more accurate because of any differences in this time-related perception.

In summary, Study 5 examined the proposed process by which mobile reviews increase perceived review accuracy. We found that consumers who learned that a UGC review was “via mobile” believed that the review was more accurate because of the effort-trust-accuracy lay theory we described earlier. Importantly, the greater effort required when writing a mobile review appears to drive up perceived accuracy because the reviewer is seen as more trustworthy. Additionally, we again ruled out another possible explanation for this effect: temporal proximity to the reviewed experience. Thus, this study’s findings build on the previous studies’ findings that demonstrated the critical mediating role of perceived accuracy by explaining why mobile reviews are perceived as more accurate. We further explore this mechanism, and link it to purchase intention, in the next study. Importantly, in the next study we manipulate the perception of effort required to write a mobile review to demonstrate the importance of this belief in driving the effect of mobile reviews on consumers’ attitudes and behavioral intentions.

## **STUDY 6**

In Study 6, we offer additional evidence that mobile reviews lead consumers to believe that more effort goes into the review-writing process, which appears to be the primary reason why knowing that a review was written on a mobile device makes it generally more persuasive. In this study, however, instead of measuring perceived effort as we did in previous studies, we manipulate the extent to which participants think that there is a discrepancy between mobile and

non-mobile reviews with respect to the effort required to write them. Our expectation was that if participants were explicitly led to believe *no difference* in effort required to write a mobile review or a non-mobile review, then the effects we found in previous studies would not transpire because the “effort-trust-accuracy” lay theory would not apply.

### *Method*

Two hundred and twelve undergraduate students at a large university in the northeastern United States completed this survey as part of a session of multiple unrelated studies and were compensated with course credit ( $M_{\text{age}} = 20.49$ , 50% female). Students were randomly assigned to one of four conditions in a 2(mobile, non-mobile) x 2(effort attribution, control) between-subjects design. Participants who did not pass the same checks used in previous studies were dropped, which left us with data from 182 participants.

As in the previous studies, all participants were asked a number of questions about mobile device behavior and saw the same “Hotel Review Task” used in previous studies. The manipulation of mobile versus non-mobile was also the same as before. To manipulate effort attribution, participants in those conditions were given additional information about how the review they were about to read had been composed. We informed them that, while it used to be difficult to engage with online review sites via mobile devices, these days the ease of writing and posting from a mobile device had been greatly improved. We also told participants that in a separate study we found that review writers reported equal levels of effort required to write reviews irrespective of device type (see Web Appendix G for details). In the control conditions this additional information was not provided. The purpose of the effort attribution manipulation was to interfere with the effort-trust-accuracy lay belief that participants in previous studies appeared to hold. In doing so, we expected that the pattern of effects for mobile versus non-

mobile reviews that we found in previous studies would not be found in the presence of the effort attribution manipulation, but would be in the absence of this manipulation.

After this, as in previous studies, participants were then asked to consider that they were planning a visit to New Orleans and needed to find a hotel. Considering this information, participants indicated how likely they would be to stay at this hotel which they indicated using a scale from “Not at all Consider” (1) to “Definitely Would Consider” (5). Participants then answered the same questions used in previous studies for perceived accuracy of the review ( $\alpha = .87$ ), perceived effort of review writing ( $\alpha = .85$ ), and perceived trust in the review ( $\alpha = .88$ ). Lastly participants were asked attention check questions from previous studies before answering standard demographic questions.

### *Results and Discussion*

We predicted that purchase intention would be higher for the mobile review than the non-mobile review, however only when the “effort-trust-accuracy” lay theory was not interfered with (i.e., in the control, but not the effort attribution, condition). To test this, we regressed purchase intent on device type (non-mobile = -1, mobile = 1), effort attribution (control = -1, effort attribution = 1), and their interaction.

Means are plotted in Figure 5 and show the expected pattern. The interaction effect of device type and attribution condition on purchase consideration for the hotel in New Orleans was significant ( $b = -.158$ ,  $t = -2.76$ ,  $p = .006$ ). Importantly, the simple effect of mobile on purchase intent was positive and significant in the control condition when there was no effort attribution to interfere with the “effort-trust-accuracy” lay theory ( $b = .20$ ,  $t = -2.40$ ,  $p = .019$ ), such that those who saw a mobile review had a higher purchase intent ( $M = 3.58$ ,  $SD = .875$ ) than those who believed the review was written on a desktop computer ( $M = 3.18$ ,  $SD = .683$ ). The simple effect

of mobile was not significant when participants believed there was equal effort put into the review regardless of device, i.e., when the effort lay theory was interfered with ( $b = -.12$ ,  $t = -1.28$ ,  $p = .168$ ;  $M_{\text{mobile}} = 2.98$ ,  $SD_{\text{mobile}} = .733$  vs.  $M_{\text{non-mobile}} = 3.21$ ,  $SD_{\text{non-mobile}} = .650$ ).

We next tested the effort-trust-accuracy mechanism by running regressions in which we estimated the effects of device (non-mobile = -1, mobile = 1), effort attribution condition (control = -1, effort attribution = 1), and their interaction on, separately, perceived review accuracy and reviewer trustworthiness. Accuracy results are plotted in Figure 5. There was a significant interaction between device type and effort attribution ( $b = -.171$ ,  $t = -2.75$ ,  $p = .007$ ). As expected, the simple effect of mobile on perceived review accuracy was positive and significant when there was no effort attribution ( $b = .298$ ,  $t = 3.05$ ,  $p = .003$ ) such that those who saw a mobile review believed it to be a more accurate review ( $M = 4.46$ ,  $SD = 1.03$ ) than those who believed the review was written via desktop (i.e., non-mobile;  $M = 3.87$ ,  $SD = .782$ ). The simple effect was non-significant, however, under the effort attribution manipulation such that participants believed there was equal effort put into the review regardless of device type ( $b = -.043$ ,  $t = -.59$ ,  $p = .557$ ;  $M_{\text{mobile}} = 4.13$ ,  $SD_{\text{mobile}} = .678$ ,  $M_{\text{non-mobile}} = 4.22$ ,  $SD_{\text{non-mobile}} = .654$ ).

Trustworthiness follows a similar pattern (Figure 5). The interaction between device type and effort attribution was marginally significant ( $b = -.135$ ,  $t = -1.85$ ,  $p = .067$ ). As expected, the simple effect of mobile on trustworthiness was positive and significant when there was no effort attribution ( $b = .368$ ,  $t = 3.38$ ,  $p = .001$ ), where those who saw a mobile review had more trust in the review ( $M = 4.39$ ,  $SD = 1.13$ ) than those who believed the review was written via desktop ( $M = 3.65$ ,  $SD = .889$ ). This effect was not significant under the effort attribution manipulation ( $b = -.097$ ,  $t = 1.01$ ,  $p = .315$ ;  $M_{\text{mobile}} = 3.93$ ,  $SD_{\text{mobile}} = .856$ ,  $M_{\text{non-mobile}} = 3.73$ ,  $SD_{\text{non-mobile}} = .909$ ).

[INSERT FIGURE 5 ABOUT HERE]



Finally, we tested the complete mechanism (i.e., mobile → effort → trust → accuracy → purchase intent; see table 2). We expected the indirect effect of mobile on purchase intent to be positive and significant, through this mechanism, in the control condition but not when under the effort attribution manipulation (i.e., only when the effort-trust-accuracy lay theory is not interfered with). We did this by estimating two serial mediation models (Hayes 2013, model 6): one under the control condition, and another under the effort attribution manipulation. In the control condition we found that mobile affected review-writing effort ( $b = .254$ ,  $SE = .10$ , 95%  $CI = [.049, .46]$ ), effort then affected reviewer trustworthiness ( $b = .53$ ,  $SE = .10$ , 95%  $CI = [.43, .72]$ ), trust then affected perceived review accuracy ( $b = .23$ ,  $SE = .08$ , 95%  $CI = [.06, .39]$ ), and then, finally, accuracy affected purchase intent ( $b = .28$ ,  $SE = .11$ , 95%  $CI = [.07, .50]$ ). The indirect effect of mobile on purchase intent through only this serial pathway was positive and significant ( $b = .005$ ,  $SE = .004$ , 95%  $CI = [.00, .02]$ ); no other possible indirect pathways with these mediating variables were significant when tested. In the effort attribution condition, as expected, the conceptualized pathway was not significant (indirect effect  $b = .00$ ,  $SE = .00$ , 95%  $CI = [-.001, .003]$ ). Also, no other possible indirect pathways with these mediating variables were significant in the effort attribution condition.

[INSERT TABLE 2 ABOUT HERE]

In summary, Study 6 demonstrates that a belief that writing reviews from mobile devices is effortful is necessary for an indication of mobile to increase consumers' purchase intent for a reviewed product or service. Differences in purchase intent only arose between the mobile and non-mobile reviews when participants' effort-trust-accuracy lay belief was not interfered with (i.e., when they were not explicitly told that the effort to write a review was equal regardless of device type). This study also extends the process findings in Study 5 by showing that the effect

of mobile versus non-mobile on the “effort-trust-accuracy” belief also extends to purchase intent; consistent with the earlier studies showing the link between accuracy and purchase intent.

## **GENERAL DISCUSSION**

Given the rising impact of mobile and the ever-important role of UGC and WOM in consumer decision-making, it is necessary to understand consumers’ interferences and biases related to device type when processing UGC reviews. Across our six studies, including real-world data from approximately 1.5 million TripAdvisor reviews in Study 1 and then five experiments, we found that when consumers read a review posted from a mobile device, a number of important interferences are made. First, consumers believe that writing the review on the mobile device required more effort than had a reviewer written the same review on a non-mobile device. Second, because of this, consumers are more inclined to trust that reviewer’s opinion and perceive the review as more accurate. Finally, because of this higher perceived accuracy, consumers place more weight on the reviewer’s opinion, thus making the review more persuasive in terms of affecting purchase intent. Importantly, this pattern of effects holds when consumers are more skeptical of UGC reviews—which reinforces our claim that central to the psychological mechanism underpinning our findings is trust (as opposed to other explanations such as temporal proximity to the experience, which we ruled out in Studies 4 and 5).

Our research makes a number of contributions to the literatures on online WOM, UGC, and mobile marketing. Relatively little is known regarding the relationship between mobile devices and consumer behavior, despite recent calls for more research that examines mobile devices and how they are used by consumers and influence consumer behavior (Grewal et al.

2016; Lamberton and Stephen 2016; Stephen 2016). Thus far, the literature in marketing has focused on how mobile devices impact advertising or promotional strategies (Bart, Stephen, and Sarvary 2014), internet search behavior (Ghose, Goldfarb, and Han 2013), and physical-world contextual factors (Luo et al. 2014). While some recent work considers mobile devices and how they affect UGC creation from a consumer behavior perspective (Melumad et al. 2016), no work to date has focused on the inferences consumers make in relation to mobile as device type in the context of UGC and how these inferences impact decision-making. The current research therefore fills an important gap in this literature by demonstrating that a seemingly innocuous piece of information—a UGC review was posted from a mobile device—can affect consumers. Practically, our findings suggest that managers should label reviews on their platforms that were posted from mobile devices with labels such as “via mobile” used by TripAdvisor and in our studies. A simple label such as this can help overcome skepticism and distrust in UGC reviews and should make it more likely that consumers reading these reviews will be influenced by them, particularly for reviews that are at least mildly positive.

A number of avenues for future research would be interesting to explore. A general implication is that seemingly small and innocuous contextual factors—such as the type of device, mobile or non-mobile, from which a UGC review was posted—can make a difference in consumers’ minds. We considered one such mobile-related factor, but there likely exist many others that would be worth investigating. To the extent that the mechanism here is underpinned by inferences that consumers make based on these small pieces of information, other relevant inferences triggered by these factors should be understood. As we showed, these small factors can have a persuasive effect that impacts consumers’ opinions and intentions. Another direction for future research would be to look at other types of mobile UGC. Here we considered reviews,

but many other forms of UGC exist (e.g., social media posts). How consumers process UGC such as posts on Facebook or Twitter when they have information on the source device type, for instance, could be a fruitful avenue for future research.

In conclusion, our results demonstrate that mobile devices are impacting the ways that consumers not only interact with online content, but how consumers interpret what other consumers say. While a majority of consumers believe that positive online reviews should be considered with a grain of salt, an indication that the review was written via mobile appears to mitigate this prevailing distrust. Mobile appears to be a signal to consumers reading positive online reviews that the review itself was the product of effortful work, should be trusted, is accurate, and thus alleviates concerns for otherwise skeptical consumers increasing purchase intentions of the reviewed product or service. As UGC review platforms continue to flourish and make their sites more amenable to mobile users, understanding how these actions impact not only users of mobile, but readers of this mobile content becomes increasingly important. We hope that this research encourages more studies into the various ways mobile devices are impacting consumers psychologically and behaviorally.

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**TABLE 1. SERIAL MEDIATION PATHWAY (STUDY 5)**

Measures												
Antecedent	M <sub>1</sub> (Effort)				M <sub>2</sub> (Trust)				Y (Accuracy)			
	Coeff.	SE	<i>t</i>	<i>p</i>	Coeff.	SE	<i>t</i>	<i>p</i>	Coeff.	SE	<i>t</i>	<i>p</i>
X (Device)	.42	.16	2.61	< .01	.03	.10	.33	.74	.23	.09	2.55	.01
M <sub>1</sub> (Effort)	---	---	---	---	.51	.05	10.31	< .01**	.07	.06	1.17	.24
M <sub>2</sub> (Trust)	---	---	---	---	---	---	---	---	.74	.07	10.30	< .01**
Constant	4.73	.11	41.97	.01**	2.87	.25	11.64	< .01**	1.83	.30	6.03	< .01**
Model	R <sup>2</sup> = .04				R <sup>2</sup> = .42				R <sup>2</sup> = .53			
Summary	F(1, 157) = 6.83, <i>p</i> < .01**				F(2, 156) = 15.35, <i>p</i> < .01**				F(3, 155) = 57.88, <i>p</i> < .01**			

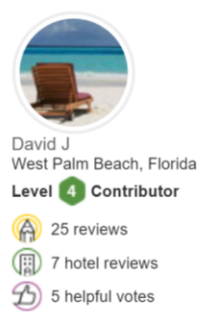
\**p* < .001. \*\**p* < .0001.

TABLE 2. SERIAL MEDIATION PATHWAY ACROSS CONDITIONS (STUDY 6)

Control Condition Mediation Tables					Effort Attribution Mediation Tables				
Antecedent		Measure			Antecedent		Measure		
		M1 (Effort)					M1 (Effort)		
	Coeff.	SE	<i>t</i>	<i>p</i>		Coeff.	SE	<i>t</i>	<i>p</i>
X (Device)	.25	.10	2.45	.02	X (Device)	.02	.08	.22	.82
M <sub>1</sub> (Effort)	---	---	---	---	M <sub>1</sub> (Effort)	---	---	---	---
M <sub>2</sub> (Trust)	---	---	---	---	M <sub>2</sub> (Trust)	---	---	---	---
M <sub>3</sub> (Accuracy)	---	---	---	---	M <sub>3</sub> (Accuracy)	---	---	---	---
Constant	4.38	.10	42.93	< .01**	Constant	4.57	.08	54.27	< .01**
Model	R <sup>2</sup> = .06				Model	R <sup>2</sup> = .00			
Summary	F(1, 91) = 6.02, <i>p</i> = .02				Summary	F(1, 91) = .05, <i>p</i> = .82			
		M2 (Trust)					M2 (Trust)		
	Coeff.	SE	<i>t</i>	<i>p</i>		Coeff.	SE	<i>t</i>	<i>p</i>
X (Device)	.23	.10	2.39	.02	X (Device)	.09	.09	.99	.33
M <sub>1</sub> (Effort)	.53	.10	5.59	< .01**	M <sub>1</sub> (Effort)	.43	.12	3.74	< .01*
M <sub>2</sub> (Trust)	---	---	---	---	M <sub>2</sub> (Trust)	---	---	---	---
M <sub>3</sub> (Accuracy)	---	---	---	---	M <sub>3</sub> (Accuracy)	---	---	---	---
Constant	1.69	.43	3.95	< .01*	Constant	1.86	.39	4.73	< .01**
Model	R <sup>2</sup> = .34				Model	R <sup>2</sup> = .15			
Summary	F(2, 90) = 23.20, <i>p</i> < .01**				Summary	F(2, 90) = 7.58, <i>p</i> < .01*			
		M3 (Accuracy)					M3 (Accuracy)		
	Coeff.	SE	<i>t</i>	<i>p</i>		Coeff.	SE	<i>t</i>	<i>p</i>
X (Device)	.10	.08	1.22	.22	X (Device)	-.06	.06	-.93	.36
M <sub>1</sub> (Effort)	.46	.09	5.33	< .01**	M <sub>1</sub> (Effort)	.46	.09	5.31	< .01**
M <sub>2</sub> (Trust)	.23	.082	2.73	.01	M <sub>2</sub> (Trust)	.06	.07	.80	.43
M <sub>3</sub> (Accuracy)	---	---	---	---	M <sub>3</sub> (Accuracy)	---	---	---	---
Constant	1.22	.37	3.34	< .01*	Constant	1.86	.39	4.73	< .01**
Model	R <sup>2</sup> = .48				Model	R <sup>2</sup> = .31			
Summary	F(3, 89) = 27.97, <i>p</i> < .01**				Summary	F(3, 89) = 512.61, <i>p</i> < .01**			
		Y (Consider)					Y (Consider)		
	Coeff.	SE	<i>t</i>	<i>p</i>		Coeff.	SE	<i>t</i>	<i>p</i>
X (Device)	.13	.09	1.47	.11	X (Device)	-.12	.08	-1.60	.11
M <sub>1</sub> (Effort)	.02	.11	.15	.88	M <sub>1</sub> (Effort)	.11	.12	.90	.37
M <sub>2</sub> (Trust)	.07	.10	.74	.46	M <sub>2</sub> (Trust)	.09	.09	1.00	.32
M <sub>3</sub> (Accuracy)	.28	.11	2.60	.01	M <sub>3</sub> (Accuracy)	.06	.14	.42	.68
Constant	2.50	.43	5.79	< .01**	Constant	2.00	.55	3.66	< .01*
Model	R <sup>2</sup> = .11				Model	R <sup>2</sup> = .08			
Summary	F(4, 88) = 2.76, <i>p</i> = .03				Summary	F(4, 88) = 1.69, <i>p</i> = .16			


\**p* < .001. \*\**p* < .0001.

**FIGURE 1: EXAMPLE OF TRIPADVISOR'S "VIA MOBILE" LABEL**



David J  
West Palm Beach, Florida  
**Level 4 Contributor**  
25 reviews  
7 hotel reviews  
5 helpful votes

*"In town for a conference and stayed at the Seaport Hotel"* NEW

Reviewed yesterday  via mobile

My wife and I stayed here for a conference and we opted for the suite. The room was new, very nicely appointed and clean. One of my favorite things about the room was the fact that we had separate A/C in our living room and in our bedroom. Since I keep the bedroom colder than the living area it was nice to not have to wait for the room to warm up to be comfortable in the morning. Our room service arrived right on time every time and was very good.

Stayed July 2016, traveled on business

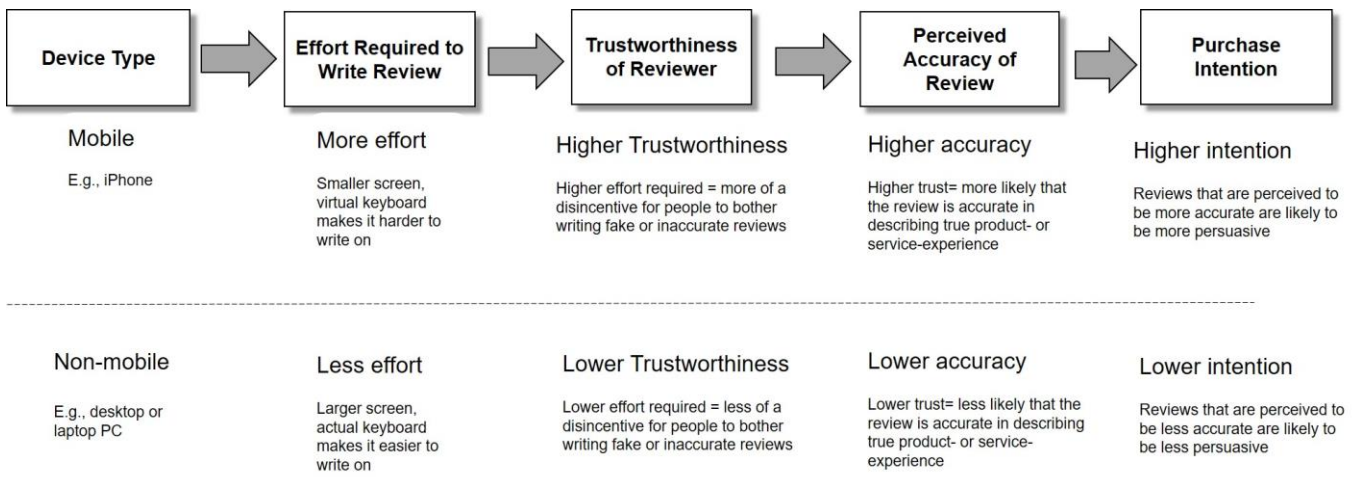
[Less](#) ▲

Helpful?  [Report](#)

[See all 3 reviews by David J for Boston](#)  
[Ask David J about Seaport Boston Hotel](#)

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC.

**FIGURE 2: CONCEPTUAL FRAMEWORK**





**FIGURE 3: REVIEW STIMULI ACROSS STUDIES**

**Mobile Restaurant Review  
(Study 2)**

*"More than just a bakery, in Boston"*

 Reviewed 2 days ago  via mobile

In Boston recently and ate at the Flour Bakery and Cafe on Clarendon St. in the Back Bay, which serves creative sandwiches and salads, along with all sorts of fresh bakery items. Sandwiches are on bread that is home-made and delicious. Breakfast choices are limited to pastries, muffins, French toast and an egg sandwich. The egg sandwich was very tasty, but the egg was pre-prepared and you cannot get egg whites. Flour is an efficient counter-service restaurant, with take-out and seating available, but getting a seat is tough during the weekend crowds.

Verified Visit

**Non-mobile (Desktop) Restaurant Review  
(Study 2)**

*"More than just a bakery, in Boston"*

 Reviewed 2 days ago  via desktop

In Boston recently and ate at the Flour Bakery and Cafe on Clarendon St. in the Back Bay, which serves creative sandwiches and salads, along with all sorts of fresh bakery items. Sandwiches are on bread that is home-made and delicious. Breakfast choices are limited to pastries, muffins, French toast and an egg sandwich. The egg sandwich was very tasty, but the egg was pre-prepared and you cannot get egg whites. Flour is an efficient counter-service restaurant, with take-out and seating available, but getting a seat is tough during the weekend crowds.

Verified Visit

**Mobile Hotel Review  
(Studies 3, 4, 5, 6)**

*"Good location, dated rooms"* NEW

  via mobile

Excellent location to enjoy New Orleans. Attached to good shopping and easy to walk to French Quarter. Close to convention centre. Still needs some room upgrade! Sink area is small and restrictive. No counter space and hard to get close to mirror.  
 Drago's a great restaurant, separately reviewed, lobby bar pleasant with good TV sight lines.  
 If you are looking for a bit of luxury and something special, you can do better. Even close to convention centre.  
 Clean, comfortable average hotel with good location. Nothing special.

Less ▲

Was this review helpful?  

**Non-mobile (Desktop) Hotel Review  
(Studies 3, 4, 5, 6)**

*"Good location, dated rooms"* NEW

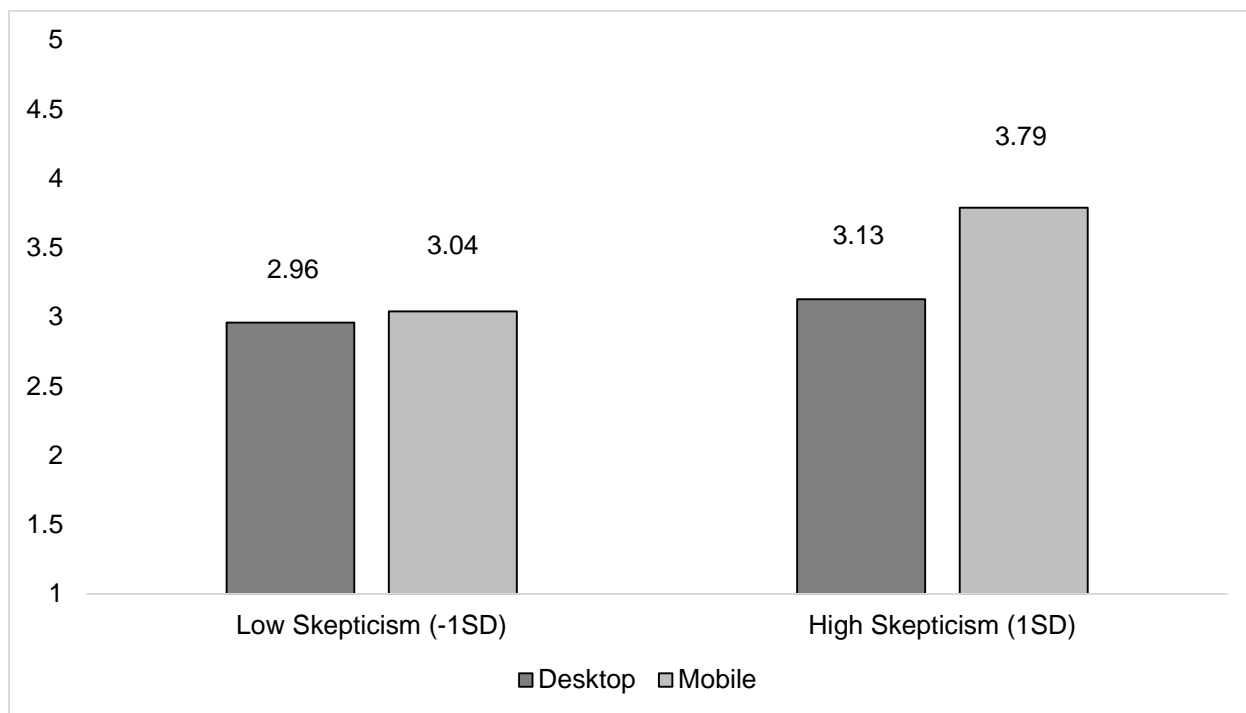
  via desktop

Excellent location to enjoy New Orleans. Attached to good shopping and easy to walk to French Quarter. Close to convention centre. Still needs some room upgrade! Sink area is small and restrictive. No counter space and hard to get close to mirror.  
 Drago's a great restaurant, separately reviewed, lobby bar pleasant with good TV sight lines.  
 If you are looking for a bit of luxury and something special, you can do better. Even close to convention centre.  
 Clean, comfortable average hotel with good location. Nothing special.

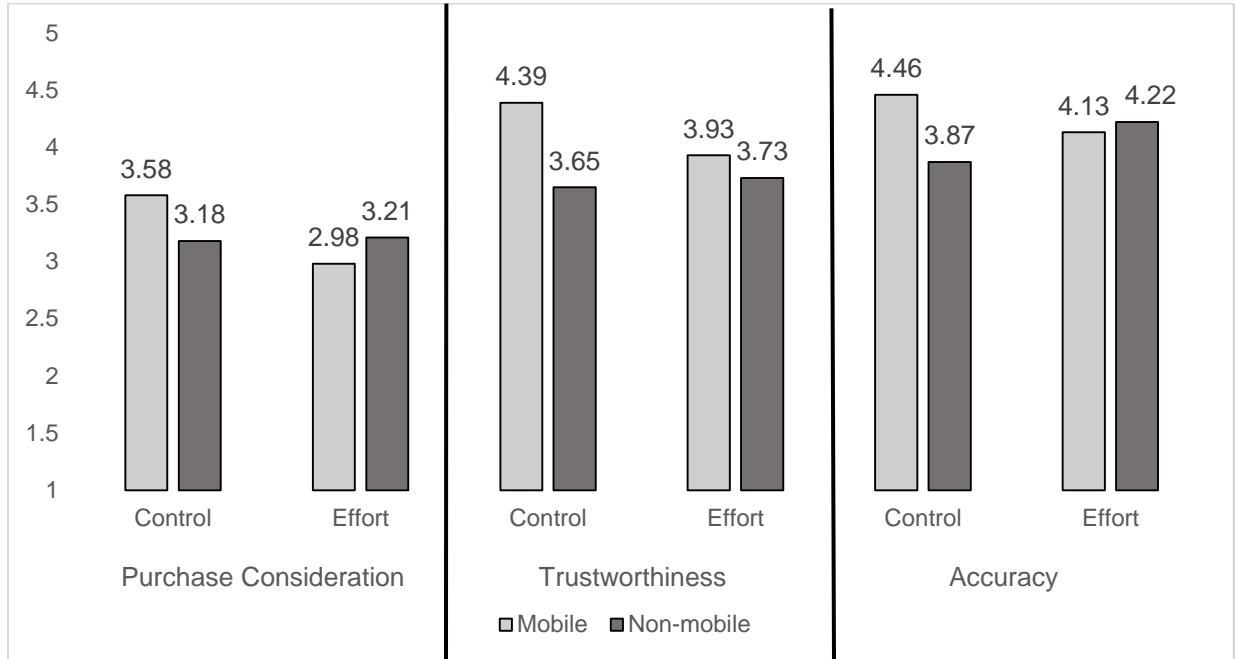
Less ▲

Was this review helpful?  

**FIGURE 4: MODERATING EFFECT OF SKEPTICISM ON MOBILE (VS. NON-MOBILE DESKTOP) ON PURCHASE CONSIDERATIONS (STUDY 3)**



**FIGURE 5: INTERACTIONS BETWEEN DEVICE TYPE AND EFFORT ATTRIBUTION FOR PURCHASE CONSIDERATIONS, TRUSTWORTHINESS, AND ACCURACY (STUDY 6)**



## WEB APPENDIX

### Web Appendix A: TripAdvisor Data

(ii) Name of hotel would be listed based on search



David J  
West Palm Beach, Florida

(v) Level 4 Contributor

(vi) 25 reviews  
7 hotel reviews  
5 helpful votes

NEW

*“In town for a conference and stayed at the Seaport Hotel”* (iii)

(i) ●●●●● Reviewed yesterday via mobile (viii)

My wife and I stayed here for a conference and we opted for the suite. The room was new, very nicely appointed and clean. One of my favorite things about the room was the fact that we had separate A/C in our living room and in our bedroom. Since I keep the bedroom colder than the living area it was nice to not have to wait for the room to warm up to be comfortable in the morning. Our room service arrived right on time every time and was very good.

Stayed July 2016, traveled on business

Less ▲

(vii) Helpful? 👍 Thank David J Report

[See all 3 reviews by David J for Boston](#) (iv) Hotel responses would be added here

[Ask David J about Seaport Boston Hotel](#)

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC.

- (i) The rating given by the reviewer (1 to 5; with 5 the most positive)
- (ii) Hotel name and location
- (iii) Review date, headline, and full text
- (iv) Whether the hotel responded to the review
- (v) Whether the reviewer was recognized as a “Top Contributor” by TripAdvisor
- (vi) The number of reviews the reviewer had written at the time data collection
- (vii) The number of helpful votes the reviewer had received across all their reviews at the time of data collection
- (viii) Whether there was an indication of “via mobile” on the review or not

### **Web Appendix B: Instructions Used in Review Tasks (Studies 2, 3, 4a, 4b, 5)**

“On the next screen you will be asked to examine a restaurant [hotel] review from the popular travel website Tripadvisor.com. The review is for a restaurant in Boston [hotel in New Orleans]. **The review is a user-generated review (i.e., written by a regular person).**

The review is on the next screen and appears as a screenshot taken directly from TripAdvisor. **When you look at this screenshot please take your time (about 1 minute).**

In particular, please **pay attention to all aspects of the review** shown in the screenshot: the review's title, the **rating given** (1 to 5), **how the review was posted** (mobile or desktop), and, of course, the **text** of the review itself.

It is important that you focus on each of these aspects, because after viewing this screenshot of a TripAdvisor restaurant review **we will ask you questions** about some of these things.”

**Web Appendix C: Items used for Attention and Manipulation Checks across Studies as  
Criteria for Dropping Participants**

**Device Attention Check:**

From what type of device did the reviewer post the review you read in today's task?

- Desktop
- Mobile
- I cannot remember

**Possible Hotel Preference Check (Used for NOLA hotel):**

Have you ever traveled to New Orleans?

- Yes
- No

**Web Appendix D: Items used for Online Skepticism (Studies 3 and 4)**

- I do not trust online user-generated reviews.
- I am skeptical of online user-generated reviews.
- I am doubtful of online user-generated reviews.
- A lot of online user-generated reviews are biased.
- A lot of online user-generated reviews are fake.
- You have to take online user-generated reviews with a grain of salt.
- Online user-generated reviews are generally accurate (RC).
- I think that online user-generated reviews can be trusted (RC).
- I have little confidence in the reliability of online user-generated reviews.

**Web Appendix E: Items used to Measure Review Accuracy (Studies 4, 5, and 6)**

- The information in the review was accurate.
- The review included all of the important details about the experience at the hotel.
- The information in this review was correct.
- This review provided an accurate example of staying at the hotel.
- The review did not leave out important details about the experience at this hotel.
- The review provided comprehensive information about this hotel.



**Web Appendix F: Items used to Measure Review Effort and Trust (Studies 5 and 6)**

- The reviewer put a lot of effort into writing this review. (E)
- The reviewer took time to craft this review. (E)
- The reviewer put a lot of thought into this review. (E)
- The reviewer went to some trouble to write this review. (E)
- The reviewer had to go out of his/her way to write this review. (E)
- Compared to the average reviewer, this reviewer put more effort into writing this review. (E)
- The reviewer is a trustworthy source for information about this hotel. (T)
- The reviewer can be trusted. (T)
- The reviewer was honest. (T)
- The reviewer was fair. (T)
- The reviewer gave a balanced view of this hotel. (T)
- The reviewer was not biased. (T)

### **Web Appendix G: Effort Attribution Manipulation (Study 6)**

Online review sites have increased the ease for readers and writers of their reviews.

While it used to be more difficult for people to read and write reviews from mobile devices compared to desk top computers, with new apps for different types of mobile devices, the ease of writing and posting these reviews has gone up.

In a separate study we conducted, when people who write online reviews from both desktop and mobile devices were asked about the amount of effort it takes them to write their reviews, the average value given for both types of reviews was a 5 out of 7 on effort. These reviewers who write for TripAdvisor found that there was absolutely no difference in their levels of effort when writing an online review, regardless of what they wrote the review on.

Please click >> to see the review (which appears as a screenshot from TripAdvisor.com).