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## **Exaggeration in Fake vs. Authentic Online Reviews for Luxury and Budget Hotels**

**Abstract:** Fake online reviews are commonly assumed to be more exaggerated than authentic ones. The assumption has however not been empirically confirmed in different contexts. Therefore, this paper investigates (1) the actual dose of exaggeration, and (2) individuals' perception of exaggeration in authentic and fake reviews as a function of hotel category (luxury vs. budget) as well as review polarity (positive vs. negative). Two studies were conducted. Study 1 examined actual exaggeration through a text analysis of authentic and fake reviews. Fake reviews did not always emerge as being more exaggerated than authentic ones. Study 2 examined individuals' perception through a 2 (hotel category: luxury, budget) x 2 (review polarity: positive, negative) online experiment. It showed that the extent to which perceived exaggeration could explain perceived authenticity of reviews was dependent on the category of hotels and the polarity of reviews at stake.

**Keywords:** authenticity; exaggeration; fake review; hotel review; online review; user perception.

### **1. Introduction**

As online reviews impact hotel booking decisions (Chang et al., 2019), the unethical practice of posting fake reviews has become common (Ansari & Gupta, 2021; Banerjee & Chua, 2014, 2017; Dwivedi et al., 2021; Ott et al., 2013). It is now a cakewalk for a hotel manager to get fake reviews written with either of the two purposes: To raise the reputation of the hotel through positive bogus reviews, or to tarnish the image of its competitors via negative entries (Ott et al., 2011; 2013). About one in seven reviews for hotels located in popular global tourist destinations could be fake (Carruthers, 2019). This is motivated by the

fact that a 1% rise in hotel review ratings increases sales per room by about 2.6% (Gössling et al., 2018). More worryingly, according to a market research survey, even though 90% of people were aware of the existence of fake reviews, only 61% were concerned by them (Loth, 2018). This is perhaps because fake reviews are seldom distinguishable from authentic ones (Yoo & Gretzel, 2009). Clearly, fake reviews stand a good chance to impair travelers' booking decisions.

Of late, fake reviews have been attracting much scholarly attention. A dominant line of investigation involves identifying linguistic differences between authentic and fake reviews. A common assumption in this body of research is that fake reviews tend to be more exaggerated than authentic ones (Banerjee & Chua, 2017; Ott et al., 2013; Yoo & Gretzel, 2009). Exaggeration refers to a style of writing that makes something appear better, worse or more important than what it actually is (Hassoon, 2016). These works often rely on the information manipulation theory which argues that genuine and fictitious content differ from each other in terms of linguistic characteristics (McCornack, 1992). The 'exaggeration' assumption in the literature has given rise to the conventional wisdom that one should be wary of reviews that are too good/bad to be true.

However, the information manipulation theory does not account for contextual nuances. This has resulted in a lack of research that empirically examines the level of exaggeration in authentic and fake reviews as a function of contexts. Few works have empirically confirmed fake reviews to be more exaggerated than authentic ones in different settings. Thus, the universality of the 'exaggeration' assumption remains untested hitherto. It is imperative to plug this research gap. After all, if fake reviews do not actually turn out to be more exaggerated than authentic entries in all contexts, the conventional wisdom of 'too good/bad to be true' needs revisiting. The current scholarly understanding on the relation

between exaggeration and authenticity—both actual and perceived—as a function of contextual idiosyncrasies is also limited, as highlighted recently by Kim and Kim (2020).

To summarize, current research has two limitations. First, even though it has compared differences between authentic and fake reviews (Banerjee & Chua, 2017; Ott et al., 2013; Yoo & Gretzel, 2009), the possible role played by contextual nuances has largely gone unnoticed. Second, most of these studies only compared the linguistic properties of authentic and fake reviews as created by review writers but did not shed light on the perceptions of review readers.

To this end, a particularly interesting contextual idiosyncrasy arises when one considers the extreme ends of hotel category—luxury and budget—in tandem with those of review polarity—positive and negative. Luxury hotels lend themselves more readily to positive reviews vis-à-vis negative ones. In contrast, budget hotels lend themselves more readily to negative reviews vis-à-vis positive ones (Banerjee & Chua, 2019; Ekiz et al., 2012; Xu et al., 2017). Meanwhile, the degree to which information is aligned with expectation in a given context shapes individuals' information behaviour (Festinger, 1957; Ho et al., 2017). Thus, hotel category-review polarity interplay should have a bearing on how authentic and fake reviews are created by review writers as well as processed by review readers.

The premise to challenge the 'exaggeration' assumption is rooted in the theoretical perspective of ecological rationality. It posits that humans adapt their decision strategies based on heuristic mechanisms to suit particular contexts (Todd & Gigerenzer, 2012). They act in ways that enable them to reach a desired outcome at the expense of minimal efforts under given circumstances (Kunda, 1990). Due to ecological rationality, efforts made by individuals in writing and reading reviews under different circumstances cannot be the same. In this vein, the theories of signaling and cognitive dissonance could also be brought to bear. Signaling theory suggests that humans heuristically rely on observable cues called signals to

reduce information asymmetry in a given context (Pee et al., 2018; Richardson et al., 1994; Spence, 1973). Furthermore, the theory of cognitive dissonance holds that an inconsistency between signals and expectation can give rise to a psychological discomfort known as dissonance (Festinger, 1957). To avoid dissonance, humans prefer signals that confirm their expectation to those which contradict.

The categorization of luxury and budget is clearly a signal of service quality offered by hotels (Sánchez-Pérez et al., 2019). Luxury hotels promise a superior experience compared with budget properties (Banerjee & Chua, 2019). The contexts of positive reviews for luxury hotels and negative reviews for budget hotels are therefore unlikely to set alarm bells ringing as the signals of service quality match with the expectations. Individuals writing and reading reviews in such contexts will not experience dissonance. Hence, they could let down their guard in their information behavior as confirmatory bias kicks in (Rassin, 2008).

In contrast, the contexts of negative reviews for luxury hotels and positive reviews for budget hotels are relatively more unexpected. The signals of service quality are not in harmony with the expectations. Individuals writing and reading reviews in such contexts will experience cognitive dissonance, which in turn impedes confirmatory bias (Jiang & Klein, 2009). The disconfirmation of expectation could force them to leave the cocoon of their information bubble. Instead of letting down their guard, they could become extra vigilant in making decisions on how to write and process reviews (Banerjee & Chua, 2019, 2021).

For these reasons, the actual dose of exaggeration injected in reviews by review writers under confirmatory circumstances (i.e.; positive reviews for luxury hotels, and negative reviews for budget hotels) stands a good chance to differ from that under disconfirmatory contexts (i.e.; negative reviews for luxury hotels, and positive reviews for budget hotels). Review readers' perception of exaggeration in reviews could also vary as a

function of these contextual nuances. Hence, the following two research questions are formulated:

RQ 1: How does the actual dose of exaggeration in authentic and fake reviews vary as a function of hotel category as well as review polarity?

RQ 2: How does the perception of exaggeration in authentic and fake reviews vary as a function of hotel category as well as review polarity?

The paper is significant for both theory and practice. With its roots in the theoretical perspectives of ecological rationality, signaling and cognitive dissonance, it challenges the implicit assumption in the literature that fake reviews are always more exaggerated than authentic. In so doing, it redirects attention to contextual idiosyncrasies. The findings help add boundary conditions to the ‘exaggeration’ assumption. The paper also responds to the recent research call to better understand authentic and fake reviews from the perspective of both review writers and review readers (Kim & Kim, 2020). This approach extends prior research on online review authenticity (Banerjee & Chua, 2017; Ott et al., 2013; Yoo & Gretzel, 2009) that usually compares the linguistic properties of authentic and fake reviews as created by review writers but overlooks review readers’ perceptions. On the practical front, the paper has implications for review readers, review website designers, and businesses. It also calls for revisiting the conventional wisdom of ‘too good/bad to be true’.

The remainder of the paper is structured as follows: Section 2 offers a review of the related literature and develops the hypotheses. Section 3 and Section 4 present the two studies—the former addressing RQ 1 and the latter addressing RQ 2. Section 5 discusses the findings. Finally, Section 6 brings the paper to a close by outlining its key points.

## **2. Literature Review and Hypotheses**

### *2.1. Online Reviews: Authenticity and Exaggeration*

The level of exaggeration in authentic and fake online reviews is assumed to be different. While the former represents innocuous experience-sharing devices that do not call for over-the-top superlatives, the latter is specifically intended to convince by hook or by crook (Banerjee & Chua, 2017; Levine et al., 2016; Newman et al., 2003).

Meanwhile, writing about fictitious experiences is cognitively more challenging than describing genuine experiences (Burgoon & Qin, 2006; Newman et al., 2003). The greater the cognitive load experienced in a writing task, the lower is the available bandwidth to craft sentences. Given the limited cognitive capacity experienced while writing fake reviews, using exaggeration could be an easy go-to strategy to fill up the content.

In this vein, Yoo and Gretzel (2009) showed fake reviews to be richer in positive and negative emotions compared with authentic ones. Ott et al. (2013) and Wu et al. (2010) demonstrated that reviews that are embellished with extreme emotions were more likely to be fake than otherwise. Banerjee and Chua (2017) reported that fake reviews were more exaggerated than authentic ones through greater use of exclamations. However, whether this finding holds across several contextual idiosyncrasies has yet to be empirically verified.

This is where the theory of ecological rationality adds a new perspective to the literature on online review authenticity. It essentially posits that individuals' decision-making process is context-dependent (Kunda, 1990; Todd & Gigerenzer, 2012). This is particularly true where many possible courses of action exist—as in the tasks of writing and reading reviews. Both authentic and fake reviews can be written in umpteen ways; they can also be processed using a variety of heuristics. Ecological rationality should therefore dictate how authentic and fake reviews are written and read in different contexts. In particular, the level

of exaggeration injected by review writers and perceived by review readers will differ between confirmatory and disconfirmatory contexts.

## *2.2. Confirmatory and Disconfirmatory Contexts in Isolation*

*Confirmatory contexts.* According to signaling theory, hotel category is a signal of the quality of service that one can expect from hotels (Banerjee & Chua, 2019; Pee et al., 2018; Richardson et al., 1994; Sánchez-Pérez et al., 2019; Spence, 1973). Luxury hotels signal a better service quality vis-à-vis budget properties. Hence, positive reviews for luxury hotels and negative reviews for budget hotels represent contexts that are fairly expected.

Since the signal is consistent with expectation, these contexts would promote confirmatory bias among review writers. Both authentic review writers and fake review writers could let down their guard, and underestimate the challenge of writing such entries due to ecological rationality (Kunda, 1990). Taking the signal of hotel category for granted, neither would feel the urge to use too many exaggeration cues. The level of exaggeration in fake reviews may not necessarily be higher than that in authentic reviews. Hence, the following hypothesis is posited:

H1: Exaggeration in fake reviews will not exceed that in authentic reviews in the confirmatory contexts of positive reviews for luxury hotels and negative reviews for budget hotels.

Furthermore, when reviews—irrespective of authentic or fake—are read in these contexts, confirmatory bias should kick in (Rassin 2008). Positive reviews for luxury hotels and negative reviews for budget hotels are easy to accept. Given individuals' default affinity for information that fits their preconceptions (Huang et al., 2012), they may view the reviews favorably. If so, perceived authenticity of such reviews could be high and perceived

exaggeration low—regardless of their actual authenticity. Hence, the following hypothesis is posited:

H2(a): Perceived exaggeration in fake reviews will not exceed that in authentic reviews in the confirmatory contexts of positive reviews for luxury hotels and negative reviews for budget hotels.

There is evidence that the perception of exaggeration in reviews negatively relates to the perception of authenticity (Banerjee & Chua, 2021; Festinger, 1957). This stems directly from the ‘exaggeration’ assumption in the literature (Ott et al., 2013; Yoo & Gretzel, 2009). A review perceived to be exaggerated is likely to be viewed with suspicion whereas an entry perceived to be innocuous is more likely to be seen as authentic. If perceived exaggeration in fake reviews does not turn out to be higher than that in authentic reviews, perceived authenticity of the former will also not be lower. Hence, the following hypothesis is posited:

H2(b): Perceived authenticity of fake reviews will not fall short of that of authentic reviews in the confirmatory contexts of positive reviews for luxury hotels and negative reviews for budget hotels.

*Disconfirmatory contexts.* Negative reviews for luxury hotels and positive reviews for budget hotels represent contexts that are relatively disconfirmatory (Ekiz et al., 2012; Xu et al., 2017). After all, the hotel category signals contradict expectations. These contexts would impede confirmatory bias among review writers. The contextual discrepancy could make it difficult for fake reviews to sound convincing unless they are garnished with an extra dose of exaggeration. Individuals writing authentic reviews too could inadvertently go overboard in explaining how their experience in a luxury hotel turned out to be unsatisfactory, and that in a

budget hotel delightful. The level of exaggeration in fake reviews is likely to be comparable to that in authentic reviews. Hence, the following hypothesis is posited:

H3: Exaggeration in fake reviews will not exceed that in authentic reviews in the disconfirmatory contexts of negative reviews for luxury hotels and positive reviews for budget hotels.

Furthermore, when reviews—irrespective of authentic or fake—are read in these disconfirmatory contexts, confirmatory bias would not kick in (Rassin, 2008). The contextual discrepancy would instead cause psychological discomfort, thereby making review readers suspicious (Huang et al., 2012). Given the cognitive dissonance, perceived authenticity of such reviews could be low, and perceived exaggeration high—regardless of their actual authenticity. Hence, the following hypothesis is posited:

H4(a): Perceived exaggeration in fake reviews will not exceed that in authentic reviews in the disconfirmatory contexts of negative reviews for luxury hotels and positive reviews for budget hotels.

Moreover, dictated by the conventional wisdom of ‘too good/bad to be true’ (Ott et al., 2013; Yoo & Gretzel, 2009), the perception of exaggeration should thwart the perception of authenticity. If perceived exaggeration in fake reviews does not turn out to be higher than that in authentic reviews, perceived authenticity of the former will also not be lower than that of the latter. Hence, the following hypothesis is posited:

H4(b): Perceived authenticity of fake reviews will not fall short of that of authentic reviews in the disconfirmatory contexts of negative reviews for luxury hotels and positive reviews for budget hotels.

### 2.3. Comparing Confirmatory and Disconfirmatory Contexts

*Luxury hotels.* Given the signal conveyed by luxury hotels, positive reviews are easier to accept than negative entries (Banerjee & Chua, 2019; Ekiz et al., 2012; Sánchez-Pérez et al., 2019). For luxury hotels, writing positive reviews is cognitively easier vis-à-vis negative entries, which calls for an extra dose of exaggeration to compensate for the contextual discrepancy. Therefore, both authentic review writers and fake review writers could use more exaggeration cues when writing negative entries vis-à-vis positive ones for luxury hotels. Hence, the following hypothesis is posited:

H5: For luxury hotels, exaggeration in positive reviews will fall short of that in negative reviews—regardless of actual authenticity.

If review writers inject a greater dose of exaggeration in negative reviews compared with positive reviews, this pattern is likely to be picked up by review readers. After all, research shows that review readers are usually conscious of the level of exaggeration (Banerjee & Chua, 2021). In consequence, when reading reviews for luxury hotels, negative entries may be perceived as being more exaggerated than positive ones. Hence, the following hypothesis is posited:

H6(a): For luxury hotels, perceived exaggeration in positive reviews will fall short of that in negative reviews—regardless of actual authenticity.

Furthermore, reviews that are perceived as being exaggerated would not be viewed as authentic, and vice-versa. Moreover, due to cognitive dissonance (Festinger, 1957), review readers are anticipated to be more vigilant in disconfirmatory rather than confirmatory contexts (Banerjee & Chua, 2019). Therefore, perceived exaggeration could explain

perceived authenticity to a greater degree for negative reviews vis-à-vis positive ones when luxury hotels are at stake. Hence, the following hypothesis is posited:

H6(b): For luxury hotels, perceived exaggeration will explain greater variance in perceived authenticity for negative reviews vis-à-vis positive ones—regardless of actual authenticity.

*Budget hotels.* For budget hotels, negative reviews are easier to accept than positive entries. Rebuking budget hotels is cognitively easier than praising them, which calls for an extra dose of exaggeration to compensate for the contextual discrepancy. Therefore, both authentic review writers and fake review writers could use more exaggeration cues when writing positive entries vis-à-vis negative ones. Hence, the following hypothesis is posited:

H7: For budget hotels, exaggeration in positive reviews will exceed that in negative reviews—regardless of actual authenticity.

If review writers inject a greater dose of exaggeration in positive reviews compared with negative reviews, this pattern is again likely to be identified by review readers. This is because review readers are generally attentive to the level of exaggeration (Banerjee & Chua, 2021). In consequence, when reading reviews for budget hotels, positive entries may be perceived as being more exaggerated than negative ones. Hence, the following hypothesis is posited:

H8(a): For budget hotels, perceived exaggeration in positive reviews will exceed that in negative reviews—regardless of actual authenticity.

As stated earlier, reviews perceived to be exaggerated are unlikely to be viewed as authentic, and vice-versa. Moreover, due to cognitive dissonance (Festinger, 1957), review

readers are anticipated to be more vigilant in disconfirmatory rather than confirmatory contexts (Banerjee & Chua, 2019). Therefore, perceived exaggeration could explain perceived authenticity to a greater degree for positive reviews vis-à-vis negative ones when budget hotels are at stake. Hence, the following hypothesis is posited:

H8(b): For budget hotels, perceived exaggeration will explain greater variance in perceived authenticity for positive reviews vis-à-vis negative ones—regardless of actual authenticity.

In sum, this paper formulates two broad research questions and eight more micro-level hypotheses. Two studies were conducted. Study 1 addresses RQ 1 along with the odd-numbered hypotheses. It involves a text analysis of authentic and fake reviews that were verified to be so. Exaggeration was measured in both titles and descriptions of reviews. This study is meant to examine the phenomenon of fake reviews from the perspective of review writers.

Next, Study 2 addresses RQ 2 along with the even-numbered hypotheses. It involves an online 2 (hotel category: luxury, budget) x 2 (review polarity: positive, negative) experimental survey. Each participant was exposed to a set of three reviews—some authentic, others fake—selected from the pool of reviews in Study 1. Their perception of reviews was captured using a questionnaire. Put differently, Study 2 complements Study 1 by examining the phenomenon of fake reviews from the perspective of review readers.

### **3. Study 1**

#### *3.1. Methods*

*Collection of authentic reviews.* Authentic reviews were retrieved from three platforms: Agoda.com, Expedia.com, and Hotels.com. These were selected because they

allow reviews to be posted only by bona fide travellers who had paid and actually stayed in a given hotel.

Reviews were obtained for hotels located in five popular Asian destinations—Bangkok, Hong Kong, Kuala Lumpur, Singapore, and Tokyo. From each of the five destinations, the luxury and the budget hotels with the greatest number of reviews across the three websites were identified.<sup>1</sup> This yielded a pool of 10 hotels (5 luxury + 5 budget). For each hotel, 40 entries (20 positive + 20 negative) were retrieved to create a corpus of 400 authentic reviews uniformly distributed across hotel category—luxury and budget—and review polarity—positive and negative.

[Insert Footnote 1]

The polarity of reviews was ascertained based on their ratings. Specifically, Expedia.com and Hotels.com use a 5-point rating scale. For reviews from these platforms, entries with ratings of one or two stars were treated as negative, and those with four or five stars were deemed as positive (Chen & Lurie, 2013). However, Agoda.com employs a 10-point rating scale. Scales that differ from one another in terms of ranges cannot be linearly interpolated. This is because scales with more options generally result in higher scores (Ghiselli, 1939; Johnson et al., 1982). To make ratings from Agoda.com comparable with those of Expedia.com and Hotels.com, the rescaling approach of Dawes (2002) was followed.<sup>2</sup>

[Insert Footnote 2]

Reviews were admitted to the corpus of authentic reviews based on the following inclusion criteria: One, they must be in English containing meaningful titles and descriptions, with the latter being at least 150 characters in length. Descriptions containing fewer than 150 characters are considered unreasonably short to conduct a meaningful text analysis (Banerjee, 2018; Koka & Fang, 2019; Ott et al., 2011, 2013). Two, the reviews must have been posted

as recently as possible with the contributors specifying their countries of origin. This information was necessary to create similar proportions of reviews in the corpus of fake reviews as much as possible (cf. Collection of fake reviews).

Overall, the 400 authentic reviews came in the following proportions: 40 from America, 309 from Asia Pacific, 45 from Europe, and 6 from the Middle East as well as Africa. These were spread across the three platforms as follows: 348 from Agoda.com, 28 from Expedia.com, and 24 from Hotels.com.<sup>3</sup> The reviews were inspected for quality control. Titles and descriptions of all entries were manually read to ensure that they were meaningful, and did not contain any nonsensical texts.

[Insert Footnote 3]

Finally, the validity of review polarity was verified. For this purpose, three research assistants were recruited. Each of them was randomly assigned about one-third of all reviews. They were shown the reviews without their ratings, and were asked to annotate the entries as either positive or negative. Agreement between polarity annotated by the research assistants, and that inferred from the ratings was beyond chance (Cohen's  $\kappa = .88$ ).

*Collection of fake reviews.* The task of writing fake reviews was given to participants who had no experience of staying in the identified hotels. This is informed by the literature (Banerjee, 2018; Ott et al., 2011, 2013). The participants imagined that they were working for the marketing department of a hotel. Their manager had asked them to write at most six realistic fake reviews in English for six different hotels. While some participants were instructed to write five-star fake reviews (positive), others had to write one-star entries (negative). Like authentic reviews, each fake review had to contain meaningful titles and descriptions, with the latter being at least 150 characters in length.

The participants were recruited using purposive sampling and snowballing while bearing in mind the proportion of authentic reviews from the major geographical regions of

the world. Participants had to meet the following eligibility criteria: One, they should be regular readers or contributors on review websites. Two, they must have had travel experience within the last year. The study invitation was also disseminated through offline and online word-of-mouth.

Data collection continued for about six months until a corpus of 400 fake reviews uniformly distributed across hotel category—luxury and budget—and review polarity—positive and negative—could be created. These came from 134 participants (aged 21-25 years: 40, aged 26-35 years: 64, aged 36-45 years: 30; educational background: minimally undergraduate students; gender: 63 females, 71 males). The reviews were in proportions similar to those in the corpus of authentic reviews: 30 from America, 323 from Asia Pacific, 45 from Europe, and 2 from the Middle East as well as Africa.

*Measurement and analysis.* This paper conceptualizes exaggeration in reviews along two dimensions: content and component. In terms of content, emotiveness and exclamations were considered. This is because prior research has often conceived exaggeration in reviews as the use of emotions (Wu et al., 2010; Yoo & Gretzel, 2009) and exclamations (Banerjee & Chua, 2017). In terms of component, the paper focuses on not only descriptions but also titles of reviews. Titles of reviews play a role that is similar to punchlines of advertisements. They capture attention more readily compared with descriptions (Ascaniis & Gretzel, 2012; He et al., 2018). Therefore, the dose of exaggeration injected in titles cannot be assumed to be the same as that in descriptions.

This two-dimensional treatment of exaggeration (Table 1) represents a finer-grained conceptualization of the construct compared with previous research. According to linguistic science, emotiveness is conveyed through adjectives (e.g., awesome, awful) and adverbs (e.g., beautifully, horribly), but thwarted by nouns (e.g., hotel, room) and verbs (e.g., visited, stayed). It was therefore computed as the ratio of adjectives and adverbs to nouns and verbs

(Missen & Boughanem, 2009; Piskorski et al., 2008). The use of exclamations was computed as number of exclamations per word, and was expressed as a percentage. The computations were done with the help of the Linguistic Inquiry and Word Count tool (Pennebaker et al., 2007).

[Insert Table 1 about here]

**Table 1:** Two-dimensional conceptualization and measurement of exaggeration.

	Component: Titles	Component: Descriptions
Content: Emotiveness	<p><i>Emotiveness of a title</i></p> $= \frac{\text{Adjectives}\% + \text{Adverbs}\%}{\text{Nouns}\% + \text{Verbs}\% + 1}$	<p><i>Emotiveness of a description</i></p> $= \frac{\text{Adjectives}\% + \text{Adverbs}\%}{\text{Nouns}\% + \text{Verbs}\%}$
Content: Exclamations	<p><i>Exclamations in a title</i></p> $= \frac{ \text{Exclamations} }{ \text{Words} } * 100\%$	<p><i>Exclamations in a description</i></p> $= \frac{ \text{Exclamations} }{ \text{Words} } * 100\%$

*Note.* For title emotiveness, one was added to the denominator to avoid division by zero. This was necessary because several titles contained only adjectives and adverbs but no nouns and verbs. It was however not needed for descriptions, which always contained some nouns and verbs.

Finally, data analysis involved omnibus 2 (hotel category: luxury, budget) x 2 (review polarity: positive, negative) x 2 (review authenticity: authentic, fake) three-way analysis of variance (ANOVA) to address RQ 1. Planned contrasts were performed to test the odd-numbered hypotheses. The four dependent variables were emotiveness and the use of exclamations in titles as well as descriptions of reviews.

The assumption of normality was not a concern as ANOVA is robust to its violation for sample sizes above 30 (Dattalo, 2013). The Boxplot revealed a few outliers (fewest for emotiveness of descriptions, about 20 each for the other three dependent variables). Nonetheless, they were retained as these outliers were plausible values (Miller et al., 2014), and comprised a relatively low proportion of the total sample of 800 reviews (400 authentic +

400 fake). Levene’s test for homogeneity of variance detected violation of the assumption of equality of variance. This was however not problematic because the combinations of the independent variables had equal number of samples. When the sizes of subgroups are reasonably similar, ANOVA is robust to violations of this assumption (Tabachnick & Fidell, 2001).

### 3.2. General Results

Table 2 presents the descriptive statistics for authentic and fake reviews. With respect to emotiveness of titles, only the main effect of review polarity was statistically significant,  $F(1,792)=14.01$ ,  $p<.001$ ,  $\eta_p^2=.017$ . Regardless of hotel category and review authenticity, emotiveness was higher in titles of negative reviews ( $M=8.64$ ,  $SD=23.81$ ) than those of positive ones ( $M=3.56$ ,  $SD=13.12$ ), with a mean difference of 5.08. Interestingly, titles of fake reviews were not statistically more emotive than those of authentic ones.

[Insert Table 2 about here]

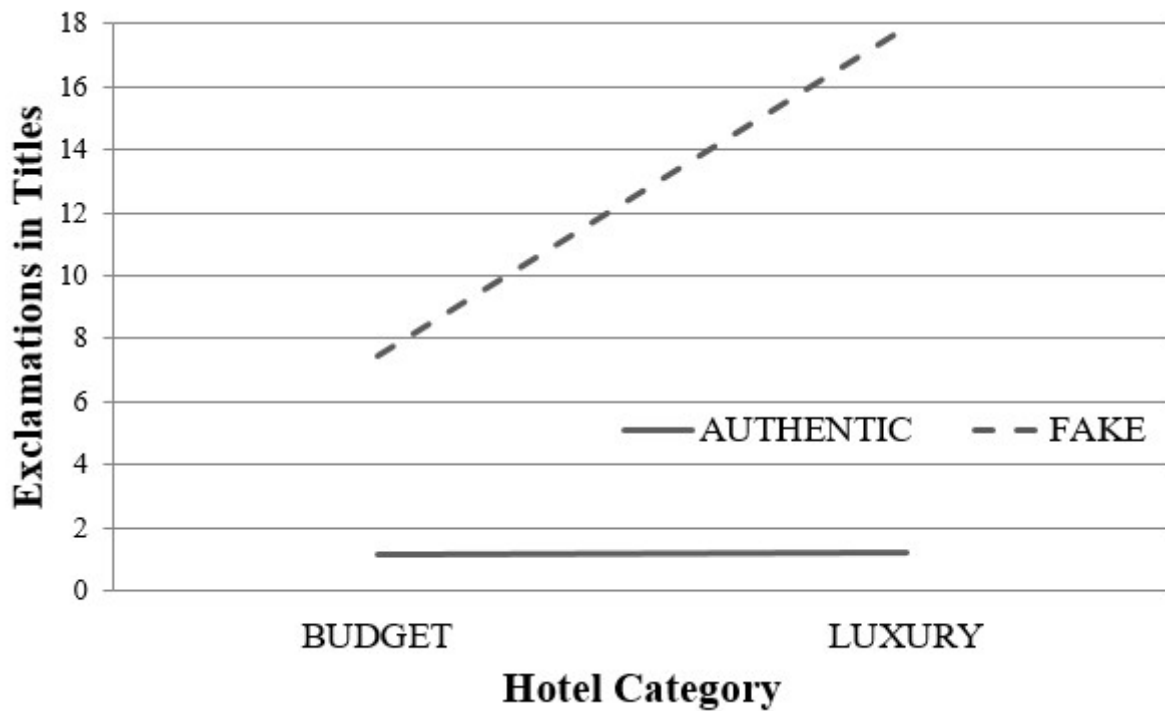
**Table 2:** Descriptive statistics ( $M \pm SD$ ) for authentic and fake reviews.

	Authentic reviews (N=400)	Fake reviews (N=400)
Emotiveness of titles	5.33 ± 19.47	6.87 ± 19.28
Exclamations in titles	1.20 ± 5.72	12.68 ± 25.33
Emotiveness of Descriptions	0.41 ± 0.16	0.45 ± 0.17
Exclamations in Descriptions	0.44 ± 1.41	0.92 ± 1.96

With respect to the use of exclamations in titles, a statistically significant two-way interaction effect arose for hotel category x review authenticity,  $F(1,792)=17.04$ ,  $p<.001$ ,  $\eta_p^2=.021$ . As shown in Figure 1, exclamations were more dominant in fake review titles for luxury hotels ( $M=17.92$ ,  $SD=30.58$ ) vis-à-vis budget properties ( $M=7.43$ ,  $SD=16.90$ ), with a mean difference of 10.49. However, they were largely comparable in authentic review titles regardless of whether the hotels were luxury or budget. Besides, the main effects of hotel

category and review authenticity were also statistically significant. The use of exclamations in titles was more frequent for luxury hotels ( $M=9.57$ ,  $SD=23.59$ ) compared with budget properties ( $M=4.31$ ,  $SD=12.83$ ),  $F(1,792)=17.30$ ,  $p<.001$ ,  $\eta_p^2=.021$ , with a mean difference of 5.26. It was also more rampant in fake reviews ( $M=12.68$ ,  $SD=25.23$ ) than authentic ones ( $M=1.20$ ,  $SD=5.72$ ),  $F(1,792)= 82.35$ ,  $p<.001$ ,  $\eta_p^2=.094$ , with a mean difference of 11.48.

[Insert Figure 1 about here]



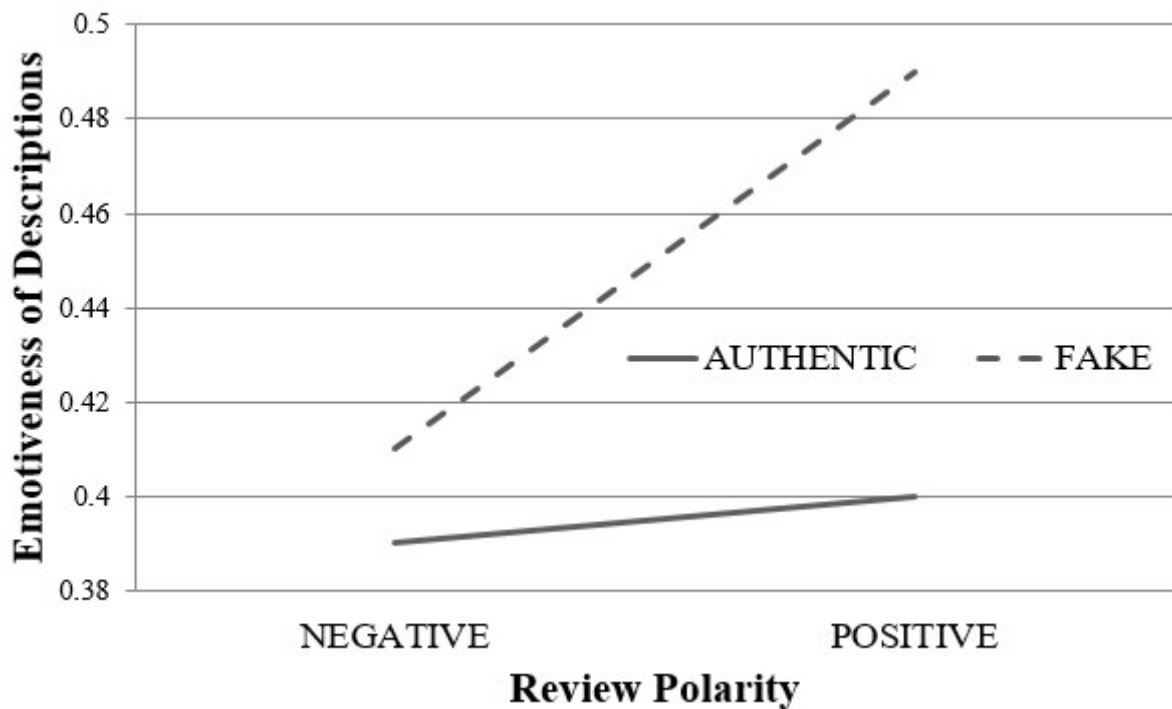
**Figure 1:** Hotel category by review authenticity interaction for exclamations in titles.

With respect to emotiveness of descriptions, the two-way interaction effect for review polarity x review authenticity was statistically significant,  $F(1,792)=6.25$ ,  $p=.013$ ,  $\eta_p^2=.008$  (Figure 2). Emotiveness was richer in descriptions of positive fake reviews ( $M=.49$ ,  $SD=.17$ ) vis-à-vis positive authentic reviews ( $M=.40$ ,  $SD=.17$ ), with a mean difference of .09.

However, such a trend was less conspicuous among reviews of negative polarity. Besides, all the main effects emerged as being statistically significant. Emotiveness of descriptions was lower for luxury hotels ( $M=.41$ ,  $SD=.15$ ) compared with budget properties ( $M=.44$ ,  $SD=.18$ ),

$F(1,792)=6.32, p=.012, \eta_p^2=.008$ , with a mean difference of .03. It was higher in positive reviews ( $M=.45, SD=.17$ ) than negative ones ( $M=.40, SD=.16$ ),  $F(1,792)=18.41, p<.001, \eta_p^2=.023$ , with a mean difference of .05. It was also more frequent in fake reviews ( $M=.45, SD=.17$ ) than authentic ones ( $M=.40, SD=.17$ ),  $F(1,792)=12.04, p=.001, \eta_p^2=.015$ , with a mean difference of .05.

[Insert Figure 2 about here]



**Figure 2:** Review polarity by review authenticity interaction for emotiveness of descriptions.

With respect to the use of exclamations in descriptions, statistically significant main effect arose for hotel category,  $F(1,792)=4.28, p=.039, \eta_p^2=.005$ , as did for review authenticity,  $F(1,792)=16.10, p<.001, \eta_p^2=.02$ . Exclamations were more dominant in review descriptions for luxury hotels ( $M=.81, SD=1.90$ ) than for budget properties ( $M=.56, SD=1.53$ ), with a mean difference of .25. Also, they were more likely to make their presence felt in fake entries ( $M=.92, SD=1.96$ ) than in authentic ones ( $M=.44, SD=1.41$ ), with a mean

difference of .48. No interactions were statistically significant. Table 3 summarizes the ANOVA results of Study 1.

[Insert Table 3 about here]

**Table 3:** F-statistics from the three-way ANOVA for Study 1.

	Emotiveness of Titles	Exclamations in Titles	Emotiveness of Descriptions	Exclamations in Descriptions
Hotel category	1.36	<b>17.30<sup>***</sup></b>	<b>6.32<sup>*</sup></b>	<b>4.28<sup>*</sup></b>
Review polarity	<b>14.01<sup>***</sup></b>	.61	<b>18.41<sup>***</sup></b>	.14
Review authenticity	1.28	<b>82.35<sup>***</sup></b>	<b>12.04<sup>**</sup></b>	<b>16.10<sup>***</sup></b>
Hotel category x Review polarity	1.54	1.70	.42	.01
Hotel category x Review authenticity	.65	<b>17.04<sup>***</sup></b>	2.03	.08
Review polarity x Review authenticity	1.31	3.21	<b>6.25<sup>*</sup></b>	.33
Hotel category x Review polarity x Review authenticity	3.41	3.05	.92	.03

*Note.* <sup>\*</sup>p<.05; <sup>\*\*</sup>p<.01; <sup>\*\*\*</sup>p<.001. Statistically significant results are in bold.

### 3.3. Hypotheses-Specific Results

*Hypotheses H1 and H3.* Planned contrasts confirmed that fake reviews were not more exaggerated than authentic ones in the confirmatory contexts of positive reviews-for-luxury hotels and negative reviews-for-budget hotels. In these contexts, the mean difference in exaggeration between authentic and fake reviews—in terms of emotiveness of titles, the use of exclamations in titles, emotiveness of descriptions, and the use of exclamations in descriptions—was statistically non-significant. Hence, H1 was supported. This pattern was also true in the disconfirmatory contexts of negative reviews-for-luxury hotels and positive reviews-for-budget hotels. Therefore, H3 was also supported. The levels of exaggeration in authentic and fake reviews were largely comparable in both the confirmatory and the disconfirmatory contexts in terms of all the measures of exaggeration.

*Hypotheses H5 and H7.* According to the planned contrasts for luxury hotels, exaggeration in positive reviews fell short of that in negative reviews only in terms of the use of exclamations in titles,  $t(398)=2.755$ ,  $p=.006$ . Hence, H5 was partially supported. The similar planned contrasts for budget hotels did not reveal any significant mean differences. Hence, H7 was rejected.

## **4. Study 2**

### *4.1. Methods*

*Research design.* An online 2 (hotel category: luxury, budget) x 2 (review polarity: positive, negative) experimental survey was conducted. The study invitation was disseminated through an advertisement posted on several notice boards inside the campus of a large public university in Asia. Individuals were recruited for participation on meeting two inclusion criteria. One, they must be minimally undergraduate students in terms of their educational profile. This was necessary because hotel reviews are mostly read by educated individuals, especially those who have completed secondary/high school (Gretzel et al., 2007; Ip et al., 2012). Two, they must have read reviews to book their travel within the previous year. This ensured that they were appropriate for the task at hand.

Altogether, 158 participants (aged 21-25 years: 102, aged 26-35 years: 47, aged 36-45 years: 9; educational background: minimally undergraduate students; gender: 79 females, 79 males; nine nationalities included with Indians and Chinese making up about 60%) took part. They received monetary incentives as a token of appreciation. They were shown a fictitious review website “LoveToTravel.com,” featuring a fictitious property “Hotel X.” The description of the hotel contained phrases such as “luxury hotel,” “stylish accommodation,” and “extensive range of cuisines” when instantiated as a luxury property. In contrast, it included phrases such as “budget hotel,” “no-frills accommodation,” and “cheap eateries”

when instantiated as a budget property. Positive and negative reviews were labeled as “5 out of 5 stars” and “1 out of 5 stars” respectively. The interface of LoveToTravel.com was pretested with 20 participants. There was unanimous agreement regarding the successful manipulation of hotel category and review polarity.

To each participant in the main study, LoveToTravel.com showed a set of three reviews selected from the data in Study 1 (cf. Table 4). To control for potential biases, care was taken to ensure that the reviews shown to participants did not contain any location, brand or cultural references. The strategy to show three reviews per participant is guided by the literature (Bambauer-Sachse & Mangold, 2011; Banerjee & Chua, 2019; 2021). If participants were exposed to more than three reviews, they would have been fatigued. This in turn would have impaired the quality of data. On the other hand, exposing them to fewer reviews would not have been realistic. This is because individuals read about three online reviews on average to develop an impression about products or services (Bambauer-Sachse & Mangold, 2011). Participants were informed that some reviews were genuine post-stay experiences while others were fictitious tales written to deceive.

[Insert Table 4 about here]

**Table 4:** Sample reviews in the dataset.

<b>Hotel Category</b>	<b>Review Polarity</b>	<b>Sample Authentic Review</b>	<b>Sample Fake Review</b>
Luxury	Positive	<p><b>Classy hotel and service with a smile</b></p> <p>it was a good stay overall. perfect night view, kind hospitality, effective check-in and out, strategic location and nice bar at the top floor. just one small thing for the new receptionist to practice more eye-contact while serving the guests, it will show a little more respect to both parties. credit to the traders personnel serving at the lobby, they are doing great job! they are effective, precise, serve to passion and smile. thank you.</p>	<p><b>Excellent staff and service</b></p> <p>From start to finish, I was treated by courteous and professional staff. The hotel is a symbol of hospitality and my first experience has been top class. I booked a standard king room and was upgraded complimentary to a room with a cute balcony and great view. I was told it was a deluxe club room and it was simply amazing. Every part of my stay at this hotel was made memorable and the credit goes to the staff and their service.</p>
Luxury	Negative	<p><b>could do better</b></p> <p>room booked for arrival 2pm, was advised it was not available and advised we would be upgraded. The hotel supplied a snack and drink but we did not have room available to 6.15pm. The number of chairs available at the pool were not sufficient for the a hotel of its size.</p>	<p><b>not worth the money</b></p> <p>The pictures of the room on the website is deceiving. When i went there, the room look as though it has not been maintained or renovated for long. The room is also quite small. Staff cannot communicate well in English and could barely understand what I was saying. I have seen better hotels and it is not worth the price staying here.</p>
Budget	Positive	<p><b>Newly renovated hotel</b></p> <p>Nice hotel. I like the people in this hotel very accommodating and friendly. Since the hotel is newly renovated, most of the amenities, rooms, corridors are new and beautiful. Housekeeping is also a plus. They clean the room very well. A buffet resto is near the hotel.</p>	<p><b>Given the budget, fantabulous hotel for sure!!!</b></p> <p>We went there a couple of months back. We are a group of three. All of us were spell bounded that a hotel which is so affordable can be so good. Bathroom was very clean which is the most important criteria for us. After all, bathroom should be neat and spacious; with adequate hot water facilities. All criteria were met successfully and adequately, not by the skin of the teeth. The rooms had good ventilation too.</p>
Budget	Negative	<p><b>Super small hotel room</b></p> <p>The hotel room is so freaking small with almost nothing inside the room. But if you are just seeking somewhere to only sleep (like me I booked the last minute before I flew there</p>	<p><b>The most messy place I have ever seen!</b></p> <p>Rooms were not ready on check-in time. We had to wait 3 hours. Bathroom was disaster, only hot water worked and it had brown color and terrible smell.</p>

		because of an accident), it is just okay even though the room is a sort of pricey.	Walls must be made of paper, because you can hear everything, there is no privacy at all. And the mess... mess was everywhere, they had never cleaned it up... I don't recommend this place.
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To control for sequence, each of the four experimental conditions were instantiated in two forms: one with two authentic reviews and a fake one (authentic-majority instantiation), and the other with two fake reviews and an authentic one (fake-majority instantiation). As shown in Table 5, there were eight experimental scenarios. Each participant was randomly assigned to one of the eight.

[Insert Table 5 about here]

**Table 5:** Instantiation of the experimental scenarios.

Hotel Category	Review Polarity	Sequence	Instantiation
Luxury	Positive	Authentic-Authentic-Fake	Authentic-majority
		Fake-Fake-Authentic	Fake-majority
	Negative	Authentic-Fake-Authentic	Authentic-majority
		Fake-Authentic-Fake	Fake-majority
Budget	Positive	Fake-Authentic-Authentic	Authentic-majority
		Authentic-Fake-Fake	Fake-majority
	Negative	Fake-Authentic-Fake	Fake-majority
		Authentic-Fake-Authentic	Authentic-majority

*Questionnaire and analysis.* Perceived exaggeration and perceived authenticity for each review was captured using a questionnaire. For perceived exaggeration, the participants were required to indicate their degree of agreement (1 = Strongly Disagree, 5 = Strongly Agree) with the following statements: “The title of the review is exaggerated,” “The description of the review is exaggerated,” and “In general, this review goes overboard to appear convincing” (Hu et al. 2012). The responses were averaged to create a composite index with higher scores indicating greater perceived exaggeration.

To measure perceived authenticity, the participants were required to indicate their degree of agreement on a scale of 1 to 5 (1 = Strongly Disagree, 5 = Strongly Agree) with the following statements: “The review is a genuine account of post-trip experience,” “The review is written after a stay in the hotel,” and “The review is an honest description of a stay in the hotel” (Blair et al., 2010; Kim et al., 2015). The responses were averaged to create a composite index with higher scores indicating greater perceived authenticity.

For both the constructs, Cronbach’s alpha exceeded .7, confirming internal consistency reliability. Convergent validity was assessed based on average variance extracted, which exceeded .5 for both. The square roots of average variance extracted exceeded the correlation between perceived exaggeration and perceived authenticity, confirming discriminant validity. An exploratory factor analysis with all the items measuring the two constructs extracted multiple factors, confirming no common method bias.

Given that each individual responded to three reviews, the 158 participants yielded 474 data points altogether (158 x 3 = 474). The distribution of these data points is reflected in Table 6.

[Insert Table 6 about here]

**Table 6:** Distribution of data points.

Hotel Category	Review Polarity	Review Authenticity	# Data points
Luxury	Positive	Authentic	53
		Fake	52
	Negative	Authentic	61
		Fake	62
Budget	Positive	Authentic	56
		Fake	61
	Negative	Authentic	65
		Fake	64
Total #			474

Finally, data analysis involved omnibus 2 (hotel category: luxury, budget) x 2 (review polarity: positive, negative) x 2 (review authenticity: authentic, fake) three-way ANOVA to

address RQ 2. Planned contrasts were used for testing the even-numbered hypotheses. The dependent variables included the composite indices of perceived exaggeration and perceived authenticity of reviews. The instantiation of the website to which participants were exposed was controlled (cf. Table 5).

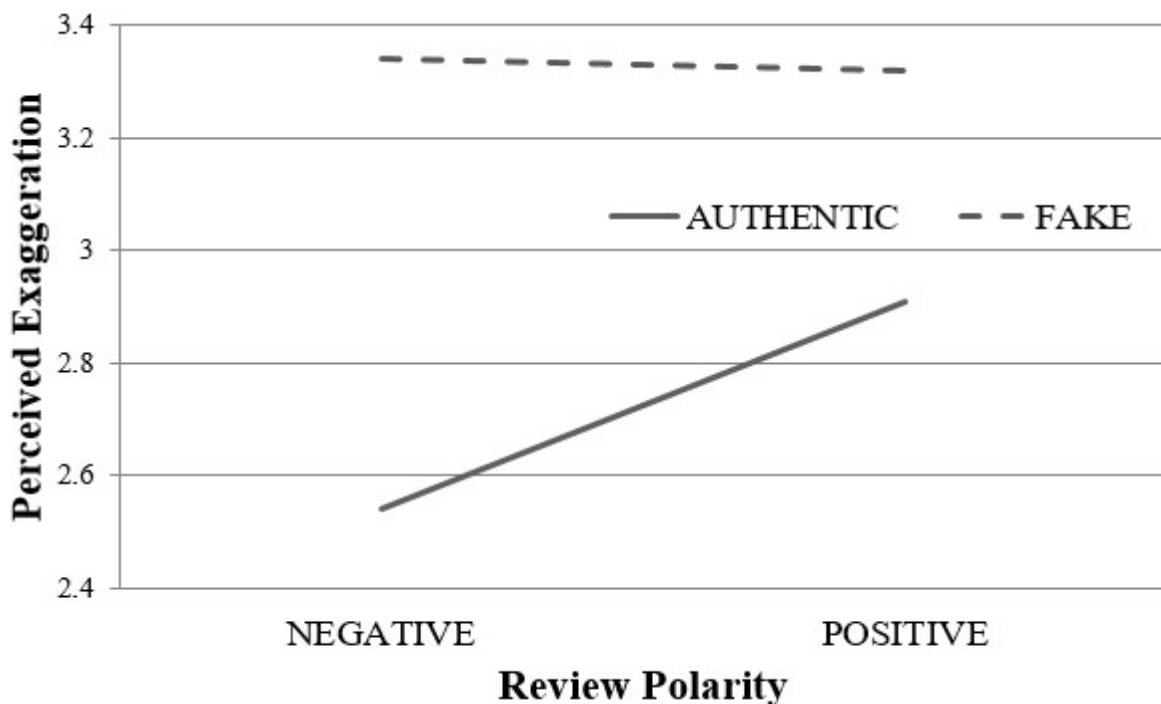
The assumption of normality was not a concern here as ANOVA is robust to its violation for sample sizes above 30 (Dattalo, 2013). The Boxplot revealed less than five outliers, which were not arbitrarily removed from the analysis (Miller et al., 2014). Levene's test for homogeneity of variance did not detect any violation of the assumption of equality of variance. In any case, ANOVA is robust to violations of this assumption when the combinations of the independent variables have reasonably similar number of samples (Tabachnick & Fidell, 2001).

For hypotheses H6(b) and H8(b), an additional analysis was conducted to investigate how perceived exaggeration informed perceived authenticity as a function of hotel category and review polarity. For this purpose, regression was used. A negative relationship was anticipated. The higher the exaggeration in a review, the lower should be perceived authenticity and vice-versa (Banerjee & Chua, 2021). Nonetheless, how the predictive power of the relationship (in terms of  $R^2$  and adjusted  $R^2$ ) varied across the experimental conditions was interesting to unearth. In this analysis, multicollinearity was not a concern as all variance inflation factors were less than five. The Scatterplot did not reveal any cases with a standardized residual of more than 3.3 or less than  $-3.3$ . Hence, there were no outliers. The assumptions of normality, linearity, homoscedasticity and independence of residuals were also not violated because the data points lied on reasonably straight diagonal lines from bottom left to top right in the Normal Probability Plot of the regression standardized residuals (Tabachnick & Fidell, 2001).

#### 4.2. General Results

With respect to perceived exaggeration, the omnibus analysis revealed a statistically significant two-way interaction for review polarity x review authenticity,  $F(1,466)=5.64$ ,  $p=.018$ ,  $\eta_p^2=.01$  (Figure 3). Among fake reviews, perceived exaggeration remained consistently high regardless of review polarity. Among authentic reviews however, positive entries ( $M=2.91$ ,  $SD=.91$ ) were perceived as being more exaggerated than negative ones ( $M=2.54$ ,  $SD=.82$ ), with a mean difference of .37. The main effect of review authenticity was also statistically significant,  $F(1,466)=56.60$ ,  $p<.001$ ,  $\eta_p^2=.09$ . Perceived exaggeration in fake reviews ( $M=3.34$ ,  $SD=.94$ ) exceeded that of authentic ones ( $M=2.71$ ,  $SD=.88$ ), with a mean difference of .63.

[Insert Figure 3 about here]

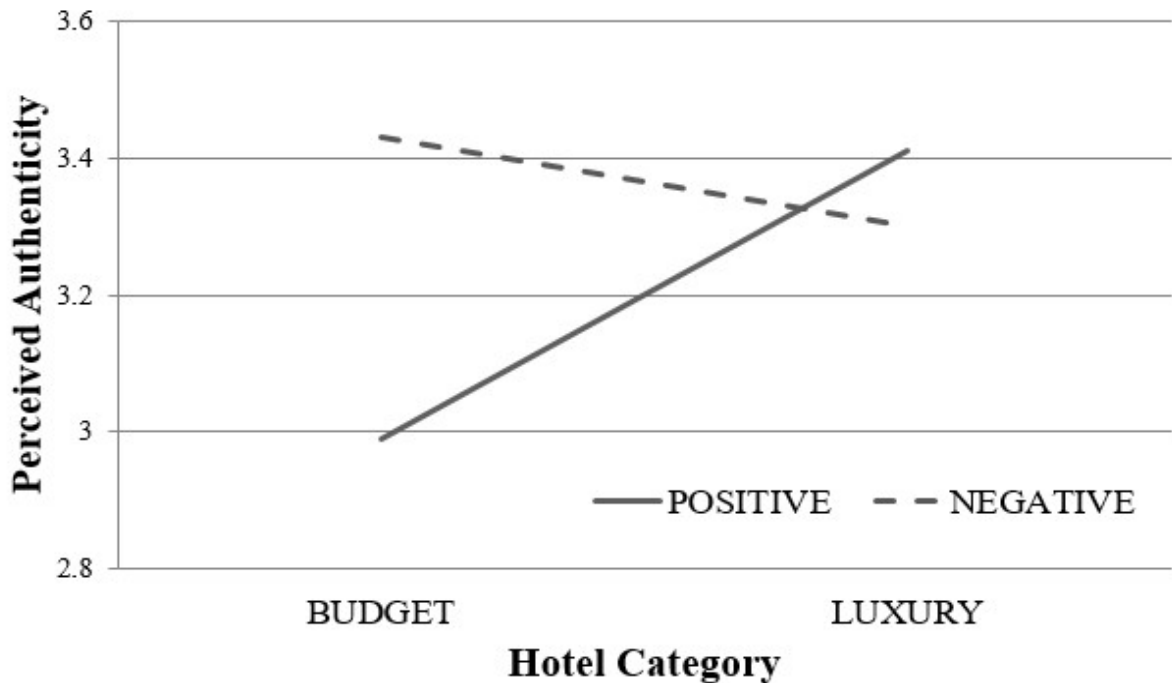


**Figure 3:** Review polarity by review authenticity interaction for perceived exaggeration.

With respect to perceived authenticity, the omnibus analysis revealed a statistically significant two-way interaction for hotel category x review polarity,  $F(1,466)=4.40$ ,  $p=.037$ ,

$\eta_p^2=.009$ . The interaction effect was disordinal (Figure 4). Hence, no meaningful inferences could be drawn about the main effects of hotel category and review polarity.

[Insert Figure 4 about here]



**Figure 4:** Hotel category by review polarity interaction for perceived authenticity.

For luxury hotels, perceived authenticity of positive reviews ( $M=3.41$ ,  $SD=1.03$ ) exceeded that of negative entries ( $M=3.30$ ,  $SD=1.19$ ) regardless of actual authenticity. Conversely, for budget hotels, perceived authenticity of positive reviews ( $M=2.99$ ,  $SD=1.15$ ) was lower than that of negative reviews ( $M=3.43$ ,  $SD=1.15$ ) irrespective of whether the entries were authentic or fake in reality.

Furthermore, the main effect of review authenticity was statistically significant,  $F(1,466)=13.68$ ,  $p<.001$ ,  $\eta_p^2=.029$ . Perceived authenticity of authentic reviews ( $M=3.50$ ,  $SD=1.06$ ) exceeded that of fake ones ( $M=3.12$ ,  $SD=1.18$ ), with a mean difference of .38. Table 7 summarizes the ANOVA results of Study 2.

[Insert Table 7 about here]

**Table 7:** F-statistics from the three-way ANOVA for Study 2.

	Perceived Exaggeration	Perceived Authenticity
Hotel category	2.12	1.19
Review polarity	3.86	1.71
Review authenticity	<b>56.60</b> ***	<b>13.68</b> ***
Hotel category x Review polarity	1.61	<b>4.40</b> *
Hotel category x Review authenticity	.30	3.65
Review polarity x Review authenticity	<b>5.64</b> *	.21
Hotel category x Review polarity x Review authenticity	3.13	.06

*Note.* \* $p < .05$ ; \*\*\* $p < .001$ . Statistically significant results are in bold.

The additional regression analysis confirmed a negative relationship between perceived exaggeration and perceived authenticity. The relation was particularly strong under disconfirmatory contexts. For example, when negative reviews were meant for luxury hotels, participants' perceived exaggeration explained 39% variance in perceived authenticity ( $\beta = -.62$ ,  $p < .001$ , adjusted  $R^2 = 38.5\%$ ). Likewise, when positive reviews were intended for budget hotels, perceived exaggeration accounted for 25.3% variance in perceived authenticity ( $\beta = -.50$ ,  $p < .001$ , adjusted  $R^2 = 24.7\%$ ).

However, when information confirmed expectation, the relation was relatively weaker. For example, when positive reviews were meant for luxury hotels, participants' perceived exaggeration only explained 9% variance in perceived authenticity ( $\beta = -.30$ ,  $p = .002$ , adjusted  $R^2 = 8.1\%$ ). Similarly, when negative reviews were intended for budget hotels, perceived exaggeration accounted for a meagre 7.3% variance in perceived authenticity ( $\beta = -.27$ ,  $p = .002$ , adjusted  $R^2 = 6.6\%$ ).

### 4.3. Hypotheses-Specific Results

*Hypotheses H2 and H4.* Based on planned contrasts, perceived exaggeration in fake reviews did not differ from that of authentic reviews in the confirmatory contexts of positive reviews-for-luxury hotels and negative reviews-for-budget hotels. A similar finding emerged with respect to perceived authenticity too. Hence, H2(a) and H2(b) could be supported. In the same way, H4(a) and H4(b) were also supported by non-significant results of the planned contrasts.

*Hypotheses H6 and H8.* For luxury hotels, perceived exaggeration in positive reviews did not differ from that in negative reviews. Hence, H6(a) was not supported. Nonetheless, H6(b) was supported. For luxury hotels, the negative relation between perceived authenticity and perceived exaggeration was stronger for negative reviews ( $\beta=-.62$ ,  $p<.001$ , adjusted  $R^2=38.5\%$ ,  $R^2=39\%$ ) vis-à-vis positive ones ( $\beta=-.30$ ,  $p=.002$ , adjusted  $R^2=8.1\%$ ,  $R^2=9\%$ ).

A similar pattern emerged for budget hotels too. Perceived exaggeration in positive reviews did not differ from that in negative reviews, thereby rejecting H8(a). Nonetheless, H8(b) was supported. For budget hotels, the negative relation between perceived authenticity and perceived exaggeration was stronger for positive reviews ( $\beta=-.50$ ,  $p<.001$ , adjusted  $R^2=24.7\%$ ,  $R^2=25.3\%$ ) vis-à-vis negative ones ( $\beta=-.27$ ,  $p=.002$ , adjusted  $R^2=6.6\%$ ,  $R^2=7.3\%$ ).

## 5. Discussion

Four key findings of the paper are worth discussing in light of the literature. First, with a finer-grained conceptualization of exaggeration in reviews (Table 1) compared with previous works (Wu et al., 2010; Yoo & Gretzel, 2009), this paper busts the myth that fake reviews are more exaggerated than authentic ones. It deepens the literature on online review authenticity (Banerjee & Chua, 2017; Wu et al., 2010; Yoo & Gretzel, 2009) by adding a boundary condition to the assumption: Fake reviews could be more exaggerated than

authentic ones at least in terms of the use of exclamations in titles. This is because among the indicators of exaggeration for which a significant main effect of review authenticity arose, the use of exclamations in titles had the highest effect size (cf. Table 3,  $F(1,792)= 82.35$ ,  $p<.001$ ,  $\eta_p^2=.094$ ).

Second, this paper found that the contextual idiosyncrasy created by crossing hotel category with review polarity dictated the dose of exaggeration injected in authentic and fake reviews. This serves as a timely reminder that fake reviews cannot always be assumed to be more exaggerated than authentic ones. The seemingly-plausible assumption is context-dependent. By demonstrating the importance of context, the paper finds support for the theoretical perspective of ecological rationality, which posits that humans adapt their decision strategies to suit particular contextual settings (Kunda, 1990; Todd & Gigerenzer, 2012).

Third, the paper empirically confirms that individuals are more prepared to accept positive reviews for luxury hotels, and negative entries for budget properties—supporting the notion of signals conveyed by hotel category (Banerjee & Chua, 2019; Ekiz et al., 2012; Pee et al., 2018; Spence, 1973). For luxury hotels, perceived authenticity of positive reviews exceeded that of negative entries. For budget hotels however, perceived authenticity of negative reviews exceeded that of positive entries. This in turn lends support to the theory of cognitive dissonance, and individuals' affinity for information that is consistent with expectation (Festinger, 1957).

Fourth, the paper found that humans strengthen their online information processing vigilance under disconfirmatory contexts. This could be inferred given that perceived exaggeration explained greater variance in perceived authenticity when the context was not in sync with their expectation—negative reviews for luxury hotels, and positive reviews for budget hotels. While previous research has shown that humans fail notoriously in differentiating between authentic and fake online content (Bond & DePaulo, 2006; Van Swol

et al., 2015), this finding suggests that their capability could be improved by presenting information in contexts that are disconfirmatory (Festinger, 1957; Ho et al., 2017). After all, such a setting is likely to impede confirmatory bias, thereby allowing for a critical appraisal of the available content.

### *5.1. Theoretical Contributions*

The paper advances the literature in three ways. First, it proposes a finer-grained operationalization of review exaggeration (Table 1) compared with previous works (Wu et al., 2010; Yoo & Gretzel, 2009). Exaggeration should be measured in not only descriptions but also titles of reviews. It should expand beyond emotiveness to also include punctuations. While previous research likened titles of reviews to punchlines of advertisements (Ascaniis & Gretzel, 2012), this paper demonstrates that titles certainly carry traits of exaggeration. As the malpractice of review fraud grows in sophistication, scholars are encouraged to treat exaggeration as an evolving construct in research on online review authenticity.

Second, this paper busts the myth that fake reviews are always more exaggerated than authentic ones. This new and counter-intuitive finding makes the paper interesting (Davis, 1971). The ways in which individuals write authentic or fake reviews was found to be dictated by circumstances such as hotel category and review polarity. By demonstrating that the ‘exaggeration’ assumption is context-dependent, the paper lends support to the theoretical perspective of ecological rationality in the realm of online review authenticity (Kunda, 1990; Todd & Gigerenzer, 2012).

Finally, the paper contributes to the online review literature by looking into both review writers (Study 1) and review readers (Study 2) in conjunction. Several works have studied how review writers make authentic reviews linguistically different from fake entries (Banerjee & Chua, 2017; Ott et al., 2013; Yoo & Gretzel, 2009). Many others have studied

review readers' perceptions of reviews without considering the authentic-fake dichotomy (Bambauer-Sachse & Mangold, 2011; Banerjee & Chua, 2019). Extending the literature, this paper studies the problem of fake reviews by considering the perspectives of writers as well as readers, thereby responding to the recent research call from Kim and Kim (2020). Compared to previous works, it serves to paint a more holistic picture of how authentic and fake reviews are written as well as read.

### *5.2. Implications for Practice*

The key implication for review readers is that not all fake reviews are guaranteed to be exaggerated. They should not solely rely on the conventional wisdom of avoiding reviews that appear too good/bad to be true while browsing reviews on websites such as TripAdvisor. Also, they should not let down their guard while reading reviews. Travelers are recommended not to blindly trust reviews that match their expectation.

For budget hotels, the paper sounds a note of caution as negative reviews were perceived as being more authentic than positive ones. It is therefore imperative for budget hotels to manage visitors' expectations reasonably so as to minimize negative reviews as far as realistically possible. Managers of budget hotels should also make it a point to respond to incoming negative reviews. This will portray that they are making a conscientious effort to improve their service quality.

The paper also has implications for online review websites. Most platforms leverage behind-the-scene algorithms to weed out fake reviews, the details of which are not disclosed to prevent spammers from gaming the system. Nonetheless, review websites should explicitly display information such as algorithm accuracy to promote perceived authenticity among review readers. If the perception of authenticity diminishes, individuals may eventually decide to boycott the websites altogether.

Furthermore, this paper shows that the linguistic properties of fake reviews vary as a function of context. However, the extent to which review fraud detection algorithms actually take contextual nuances into consideration remains largely unclear. Hence, computer scientists and developers are recommended to finetune the detection algorithms based on the context at hand, instead of relying on a one-size-fits-all approach.

Besides, review website interfaces should be designed in ways so that confirmatory bias is not able to kick in easily. For products and services that are viewed favorably, negative reviews could be bubbled toward the top of the interface. Conversely, positive reviews could be highlighted for offerings that do not receive a lot of attention. Hotel websites could also choose to display testimonials in ways that will hinder confirmatory bias. These are important because only when contexts are disconfirmatory (Festinger, 1957; Ho et al., 2017), travelers are likely to be vigilant in processing online information.

Overall, the hope of this paper is to raise awareness among businesses about the perils of review fraud. Hotel managers need to be educated so that they eschew underhanded tactics of review manipulation. If not, the pressure on them to engage in dishonest practices would continue to mount. In fact, this paper points to a major downside of faking reviews: If a hotel ends up creating exaggeratedly positive fake entries for itself, this will eventually arouse suspicion, thwart perceptions of authenticity, and dampen trust in the business. Therefore, unscrupulously manipulating reviews should not be the way to spend marketing resources.

And finally, even if businesses become completely responsible sometime in the future, one cannot rule out the possibility of people simply posting lies on the Internet. To counter this, review websites could highlight the ethical and social responsibilities of review writers in the form of pop-ups each time an individual proceeds to submit an entry. The review submission forms could also convey the importance of painting a true picture of their experiences rather than using exaggeration.

### *5.3. Limitations and Further Research Direction*

The paper should be viewed in light of a few limitations that future research should address. First, it did not find any support for hypotheses such as H7. However, it was not possible to tease out the reasons. This demonstrates that the current understanding of online review authenticity still remains incomplete. A particularly fascinating research direction is to interview individuals who write authentic and fake reviews. A comparison of writing strategies between an innocuous traveller and a spammer could be insightful.

Second, the extent to which the 400 fake reviews collected from participants in Study 1 were similar to real fake reviews written by professional content writers was not possible to verify. Hence, future research could replicate the current work by obtaining fake reviews from professionals who have experience of writing bogus entries for monetary and/or non-monetary benefits.

Third, while a variety of review sequences was considered as experimental scenarios in Study 2 (Table 5), the list was not exhaustive. For example, it did not include the sequence of all three authentic reviews, or all three fake entries. Interested scholars could therefore investigate how the order of authentic and fake reviews shapes travelers' perceptions of exaggeration and authenticity.

Fourth, in Study 2, the sample was largely dominated by young adults (21-35 years of age). Caution is recommended in extrapolating the findings to people belonging to other age groups. Specifically, future research could explore how older people process reviews to discern authenticity. Future works in this area could also consider moderators such as social media involvement and mediators such as perceived message credibility to better explain the underlying psychological mechanism of how perceived exaggeration affects perceived authenticity of online reviews.

Finally, the present research was set in the context of hotel reviews as hotels are subjected to widespread review fraud (Carruthers, 2019; Gössling et al., 2018). The findings should not be generalized to other industries. Interested scholars are encouraged to carry out similar studies with reviews of other products and services.

## **6. Conclusions**

This paper investigated the actual dose of exaggeration along with travelers' perception of exaggeration in authentic and fake reviews as a function of hotel category as well as review polarity. Study 1 examined actual exaggeration through a text analysis of authentic and fake reviews. Fake reviews did not always emerge as being more exaggerated than authentic ones. Study 2 examined individuals' perception through a 2 (hotel category: luxury, budget) x 2 (review polarity: positive, negative) online experiment. It showed that the extent to which perceived exaggeration could explain perceived authenticity of reviews was dependent on the category of hotels and the polarity of reviews at stake. Individuals were found to be particularly vigilant in processing information when reviews contradicted expectations. Theoretically, the paper advances the literature by busting the myth that fake reviews are more exaggerated than authentic ones. Review readers should therefore apply the conventional wisdom of too good/bad to be true with caution.

## Footnotes

1. Hotels are assigned hotel ratings by websites based on the availability of facilities such as spas, valet parking, and jacuzzis. For the purpose of this study, luxury hotels refer to properties that have been consistently assigned hotel ratings of four stars or higher by Agoda.com, Expedia.com, and Hotels.com. These are upscale properties that offer the best facilities among all hotels. Budget hotels refer to properties that have been consistently assigned hotel ratings of two stars or lower. These hotels tend to offer minimal facilities. Hotels with inconsistent hotel categories across the three review websites were not considered.
2. The rescaling approach of Dawes (2002) requires anchoring the scale end-points of one scale with those of the other scale, and inserting intervening values at equal intervals. Hence, to rescale a 5-point scale to a 10-point scale, a score of 1 would remain 1 while 5 would be anchored to 10. The mid-point 3 on the 5-point scale would be the mid-point between 1 and 10, that is, 5.5. Likewise, 2 and 4 on a 5-point scale would be rescaled to 3.25 and 7.75 on a 10-point scale respectively.
3. Authentic review collection for each hotel involved obtaining 20 most recent positive entries and 20 most recent negative entries that were in English containing meaningful titles and descriptions (of at least 150 words) along with contributors' countries of origin. And it just happened that Agoda.com had substantially more reviews that met all of these criteria compared with either Expedia.com or Hotels.com. As the sample was skewed with disproportionately more reviews from Agoda.com than the other two platforms, it would not have been statistically meaningful to find out if the reviews differed across the three platforms. Nonetheless, ANOVA was employed to find out if the reviews differed across hotels in terms of exaggeration. No significant difference was detected among the luxury hotels as well as among the budget hotels in terms of any of the four measures of exaggeration.

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