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OPERATIONS, INFORMATION & TECHNOLOGY | RESEARCH ARTICLE

The impact of emotionality and trust cues on the perceived trustworthiness of online reviews

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Abstract: Online reviews and trust cues are two core aspects of e-commerce. Based on these features, users can make informed decisions about the products and services they buy online. Although prior studies have investigated on various review characteristics, the writing style has been examined less frequently. This empirical study simulated an e-commerce platform, in which participants ($N = 124$) were confronted with the reviews and helpfulness votes of other users while searching for one certain product (i.e. a laptop). The task was to rate how trustworthy or fake the reviews are, and the purchase intention after reading each review. Our results show that a factual writing style is considered more trustworthy, less fake, and entails a higher purchase intention when compared to emotional reviews. The trust cues were only relevant in interaction with variables that measure trust in the Internet as a safe environment for making monetary transactions. Furthermore, we found that trustworthiness influenced purchase intention, but the fakeness perception of the review does not yield such effects. We suggest future studies to understand this result and highlight implications for platform design.

Subjects: Psychological Science; ICT; Consumer Behaviour; Internet / Digital Marketing / e-Marketing

Keywords: e-commerce; fake reviews; trust cues; purchase intention; online reviews

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PUBLIC INTEREST STATEMENT

When looking for a product online, customers can find factual reviews and other that are filled with emotional words. This study compares these two writing styles with an online task that simulated a situation where participants pretended to buy a laptop. Participants had to rate if the reviews were trustworthy, fake, and if they would buy the laptop based on the reviews, which were accompanied with “helpfulness votes”. We found that participants perceived factual reviews as more trustworthy, less fake, and that they are more prone to buy the laptop based on these, when compared to the emotional reviews. We also found that participants who think that the Internet is a safe place to purchase, also tend to trust more the helpfulness votes. Finally, we suggest that perceiving a review as trustworthy implies that it cannot be perceived as fake, since these are two opposites of the same concept.

1. Introduction

Social interactions and decision making are two of many aspects that are evolving since the appearance of the web 2.0 and its characteristic user-generated content. One of the most relevant examples that combines both aspects is the electronic word-of-mouth (Hussain et al., 2018). Thanks to e-commerce platforms, users can receive automated recommendations about products and services that might be of interest to them (Ricci, Rokach, & Shapira, 2011). Furthermore, users can also actively intervene in the decision of other online customers, by means of writing reviews and by responding to questions about products or services. E-commerce platforms can also support users in their decisions by offering certain hints about the trustworthiness of online reviews. These so-called trust cues can be, for example, ratings of a product or “helpfulness votes” of a review (Cao, Duan, & Gan, 2011). In this study, we investigate the relation between the writing style (emotional *versus* factual) of a review and its helpfulness, as a trust cue.

1.1. Emotionality of online reviews

Many studies have shown how the reviews of other customers have a major influence on the perceived trust and on the purchase intention of users (Furner & Zinko, 2017; Lin & Lu, 2010; Zhang, Wei, & Liu, 2017). Particularly interesting within all these studies, Filieri (2016) performed 38 qualitative interviews to assess which review characteristics are considered trustworthy. He found that relatively long reviews, written in a style that a typical consumer would use, and which describe personal experiences, are considered trustworthy. On the other hand, short reviews, the use of sensationalist titles, and a gushy language filled with superlatives are considered untrustworthy (Filieri, 2016). Yet, not so many studies have investigated on the emotionality versus the factuality of the reviews. Some studies (Grabner-Kräuter & Waiguny, 2015; Hong, Huang, Burtch, & Li, 2016) have shown that emotionally-charged reviews are considered less trustworthy, whereas reviews with factual details are correlated with a higher purchase intention (Jiménez & Mendoza, 2013). Wu, Shen, Fan, and Mattila (2017) compared the figurative and literal language of online reviews, finding that the relation between language typicality and the reviewer’s perceived expertise is mediated by the language style, thus highlighting the impact of literal language on credibility.

Several studies (Antioco & Coussemont, 2018; Agnihotri & Bhattacharya, 2016; Lee, Park, & Han, 2008; Ludwig et al., 2013; Salehan & Kim, 2016) have rather focused on the valence of the reviews, which can be either positive or negative. A meta-analysis by Purnawirawan, Eisend, De Pelsmacker, and Dens (2015) showed that the valence has an effect on attitudes towards—and perceived usefulness of—the reviews. Furthermore, variables such as familiarity or type of product have a moderating effect between the valence of a review and its perceived usefulness. Regarding other moderating variables, such as credibility and purchase intention, the results of this meta-analysis show no main-effects for the former and an explanation of 5% of the variance of purchase intention for the latter (Purnawirawan et al., 2015). The current study focuses on positive, short reviews in order to assess purchase intention, trustworthiness, and the perception of fake reviews. Online reviews are characterized for presenting a skewed distribution with large number of positive reviews which contrasts to low numbers of negative comments online (Schoenmueller, Netzer, & Stahl, 2018). Since users usually encounter positive reviews on the Internet, it is worthwhile to focus on these, in order to further investigate in the perception of such extreme distributions, yet including other interesting factors, such as the relation between the emotionality of an online review and if this is perceived as trustworthy or fake.

Our intention is not to delve further into the already well-documented topic of review valence; we focus instead on the role of the review’s emotionality, which has not been studied in such detail. In addition to the perceived trustworthiness of reviews and the resulting purchase intention, with the current study we also intend to observe which writing style (i.e. factual or emotional) is more likely to be considered fake. Regarding the emotionality of a review, Grabner-Kr

äuter and Waiguny (2015) suggest that factual reviews are considered more credible, whereas Filieri (2016) found that fake reviews are characterized by the use of emotional expressions. Based on this empirical background, we formulate our first hypothesis:

H1: Factual reviews, compared to emotional reviews, are considered more trustworthy and less fake, and that these entail a larger purchase intention.

1.2. Trust cues embedded in reviews

Online reviews are only as good as the value they provide to users (for example, by uncovering details that are missing from official product descriptions). If customers do not trust online reviews, or if they have reasons to believe the reviews are fake, they may simply disregard them (Utz, Kerkhof, & Van Den Bos, 2012). This, in turn, could cause users to lose trust in the platform that provided said reviews and might even stop using it completely. E-commerce platforms can support users by showing trust cues that allow them to determine how trustworthy a review is.

Trust cues are interface elements, such as visual glyphs, that help users determine the reliability of the presented information (Sacha, Senaratne, Kwon, Ellis, & Keim, 2016). In their model of online trust, Corritore, Kracher, and Wiedenbeck (2003) note that trust cues can originate from the design of the website (or system) as well as from its content. They also argue that increasing users' trust in automated systems, such as recommender systems, is dependent on increasing their transparency. Recommender systems are software tools that provide suggestions on which items (e.g., products or services) might be suitable to a user, based on the user's preferences and constraints (Ricci et al., 2011).

Explanations can help increase trust in the recommender system by explaining to the users why the recommendations were given (Herlocker, Konstan, & Riedl, 2000). In this sense, trust cues can be considered as an additional way of explaining recommendations. Since most recommender systems show personalized suggestions to users (Ricci et al., 2011), it is also worthwhile to investigate how the trust cues themselves could be adapted to support the user's decision making. Barbu and Ziegler (2017) include trust cues as a separate dimension in their proposed domain space for personalizing the presentation of recommendations, answering the design question "What indications about the reliability of the information are presented?". They argue that customers should be provided with sufficient information to understand how trustworthy each part of a recommendation is.

Based on Walther and Parks' (2002) "warranting principle", which states that cues are more useful when they are harder to manipulate, Utz et al. (2012) assert that online reviews can be more trustworthy than, for example, vendor-provided information. However, for this to hold true, it is important that customers can distinguish between legitimate and fake reviews. In e-commerce, a typical trust cue is an indication that a reviewer has, in fact, bought the product that he/she is reviewing, e.g., "verified purchase". Helpfulness votes are another example of trust cues. Many websites, including Amazon, display the number of readers who have found a given review to be useful, for example "ten people found this review helpful" (Cao et al., 2011). Precisely, trust cues can be used to filter and sort out user-generated information. Filtering information allows users to perceive reviews as more or less helpful even before reading them. This leads to different kinds of biases, such as the Matthew effect (also named "rich-gets-richer-effect", which shows that the first reviews will probably be more relevant than recent ones) or the Ratchet effect (i.e., once reviews become highly popular, their relevance will not decrease substantially—Wan, 2015), which suggest that there is an intrinsic connection between reviews and trust cues. For our experiment, we selected "helpfulness votes" as a trust cue. Therefore, we formulate our second hypothesis:

H2: High number of helpfulness votes is considered more trustworthy, less fake, and entails a larger purchase intention when compared to a low number of helpfulness votes.

The perceived trust on the platform cues might not be strictly dependent on their valence. In other words, a high number of helpfulness votes might not automatically generate trust towards the review. Other relevant user characteristics may play an important role in this relation. For instance, Liang, Choi, and Joppe (2018) used the platform “Airbnb” as an example to show how institution-based trust (trust in Airbnb) mediated the relation between transaction-based satisfaction and repurchase intention. This indicates that, if people think that a certain e-commerce platform is a safe place to make transactions and they are satisfied with it, they will most probably keep purchasing products or services there. Similarly, we infer that users’ trust in the Internet might influence their trust in e-commerce platforms. Moreover, users’ trust in e-commerce platforms might have an effect on their trust in the helpfulness votes, since these are provided by the platforms (Utz et al., 2012). Based on these arguments, we hypothesize that users trust in the helpfulness votes depends on the trust in the platform (which ultimately administrate these). Furthermore, the trust in the e-commerce platform depends on the general trust in the Internet. We formulate as a third hypothesis that:

H3: The relation between participants’ institutional-based trust (trust in the Internet) and their perceived trust in high number of helpfulness votes is mediated by the participants’ trusting beliefs (trust in online shops).

There is rich scientific literature about the hints and tools that e-commerce platforms offer to users, but relevant topics, like the increasing number of fake reviews in e-commerce platforms needs to be addressed, since the “perceived fakeness” of a review might influence the purchase intention (Luca & Zervas, 2016; Mrudula & Babu, 2018). Discovering which kind of writing style and trust cues are considered fake, might help researchers and web-developers to implement solutions to this problematic. Former studies have shown the positive relation between trust and purchase intention (Furner & Zinko, 2017; Lin & Lu, 2010; Zhang et al., 2017). Yet, it is important to understand what happens to this relation when reviews are considered fake. In this regard, it is relevant to understand how the perception of fake reviews moderates the relation between users’ trust in the review and the purchase intention. With this in mind, we hypothesize that:

H4: The relation between perceived trust and purchase intention is moderated by the perceived fakeness of the review.

In summary, this study aims at understanding which type of writing style is mainly perceived as fake, trustworthy, and entails a higher purchase intention. Similarly, we also intend to compare the number of helpfulness votes attached to the reviews. We also infer that the relation between trust in online transactions and trust in the helpfulness votes is mediated by trust in the e-commerce platforms. Furthermore, we aim to observe how the fakeness perception moderates the relation between perceived trust and the purchase intention. With all these, we will have a better overview of the role of wording in the user’s perception of trustworthy or fake reviews. Furthermore, we will comprehend what role do different stances of trust play when reading online reviews with their corresponding trust cues. Finally, we will be able to discuss about the similarities and differences between trustworthy and fake reviews and how these relate to the purchase intention.

2. Methods

2.1. Pre-study

A pre-study was conducted to assess the emotionality of reviews used in the main study.

2.1.1. Participants

Thirty participants, with ages between 21 and 40 years ($M = 29.47$, $SD = 4.19$ years), took part in the pre-study. Fifteen were females, 14 were males, and one gave no information on

gender. Regarding other relevant sociodemographic information, nine participants were students and 21 were employees. Twenty-three participants reported that they had purchased items online five times or more in the last six months. Twenty participants reported that they very often read reviews before purchasing items, whereas seven always read online reviews. Participants were recruited via convenience sampling and through the use of e-mail lists.

2.1.2. Instrument

We looked for online reviews generated for a laptop in a popular e-commerce platform. After a careful search, we selected 30 real reviews and rephrased them to fit our design. We generated a set of 15 short, emotional reviews and 15 short, factual reviews.

We used an online survey, in which participants were first asked to answer sociodemographic questions. Participants were then instructed to imagine the following scenario: “You are looking for a laptop, since your old one is broken. You check the following online reviews in an online-shop”. Afterwards, participants were presented with the 30 reviews in a randomized order. The task was to evaluate—on a six-point Likert scale—each review with respect to its emotionality (1: not at all emotional; 6: very emotional) and its impartiality (1: very objective; 6: very subjective).

2.1.3. Results

In order to select 20 reviews for the main-study, we compared the means of the emotional and factual reviews with a paired sample t-test. Regarding the emotionality, we found significant difference between the a-priori defined emotional ($M = 4.76$, $SD = .58$) and factual ($M = 2.17$, $SD = .61$) reviews, $t(29) = 18.31$, $p < .001$. With regard to the subjectivity, the emotional ($M = 4.72$, $SD = .61$) and factual ($M = 3.09$, $SD = .87$) reviews also differed significantly, $t(29) = 12.39$, $p < .001$. For both measures, the emotional reviews were considered more emotional and subjective when compared to the factual reviews. With this, we were sure to present two groups of reviews with significant differences: emotional and factual. For the main study, we excluded the five emotional comments with the lowest emotionality as well as the five factual comments with the highest emotionality, resulting in ten definitive emotional reviews and ten definitive factual reviews.

2.2. Main study

The main study was conducted online and contained a core task, in which participants evaluated online reviews, followed by two questionnaires on online trust and some sociodemographic questions at the end.

2.2.1. Participants and recruitment

Participants were recruited from various Internet platforms (Facebook, empirio, PollPool, SurveyCircle), e-mail lists, and word-of-mouth recommendations. One hundred twenty-four participants (28.2% females and 69.4% males; 2.4% gave no information on gender) with a mean age of 33.88 years ($SD = 13.02$) took part in the main study. Thirty-seven participants (29.8%) were students and 53 participants (42.7%) had a regular job. This study was carried out in accordance with the recommendations of the German Psychological Society (DGPs). The protocol was approved by the Ethics Committee of the Department of Computer Science and Applied Cognitive Science of the Faculty of Engineering at the University of Duisburg-Essen. All subjects were explicitly informed about the study, in accordance with the declaration of Helsinki, and gave written informed consent to participate in the online study, by means of clicking on the “continue” button. Subjects were offered the chance to participate in a raffle, in which they could win gift cards that can be used in many popular shops.

2.2.2. Instruments

2.2.2.1. *Evaluation of internet reviews.* For the main study, participants were instructed to imagine a specific scenario: “You are searching for a new laptop, since your old one got broken. While searching for different laptops, you finally decide to choose between five laptops, which fulfill all your technical requirements and are within your budget”. Participants saw four reviews (see two examples in Figure 1) for each one of the five displayed laptops. After each review, participants had to answer three questions on a six-point Likert scale (1: totally disagree; 6: totally agree): 1. I consider this review as trustworthy; 2. I think this review is fake; 3. I would buy the laptop based on this review. Regarding the question that measured the fakeness perception, participants were informed beforehand that a fake review is “a review which was submitted by a person who had had no experience with the product at all”.

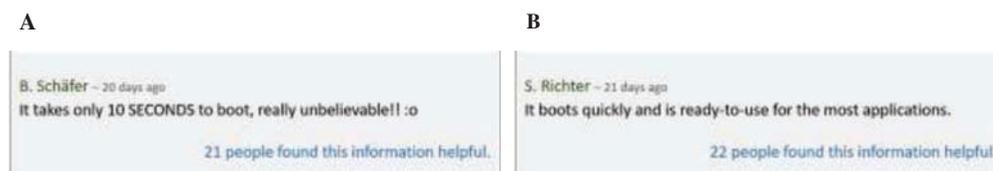
Each participant viewed 20 reviews: ten emotional and ten factual. For each laptop, participants saw two emotional and two factual reviews. In addition, below each review there was the number of helpfulness votes, either high (in the range 21–25 votes) or low (in the range 1–5 votes). These amounts were chosen based on a thorough search of laptops in different e-commerce platforms. Although we found some laptops with over 50 reviews, many others had around 20 to 30 reviews. With this we account for the ecological validity of the design, since it is common to find these amounts of helpfulness votes in online shops.

For the sake of simplicity, in this paper we shall refer to the case in which a review has a high number of helpfulness votes as “high cue” (instead of high number of helpfulness votes in the online shop). In contrast, the term “low cue” shall denote the condition in which a low number of users considered a review helpful.

To distinguish between the four conditions (emotional *versus* factual reviews and high *versus* low trust cues) in the analysis and trace back the outcome to only one condition, we designed two versions of the task that were randomly assigned to the participants (50.8% participated in one of the two versions) when clicking on a link. The two versions combined the reviews and the trust cues, meaning that half of the participants saw, for instance, a factual review with a high cue, whereas the other half saw the same factual review with a low cue.

2.2.2.2. *Trust in e-commerce.* We used two subscales of the Trust Questionnaire by McKnight, Choudhury, and Kacmar (2002) to measure trust in e-commerce: Institution-Based Trust (15 items, for example “I am comfortable making purchases on the Internet”) and Trusting-Beliefs (11 items, for example “I believe that LegalAdvice.com would act in my best interest”). With the Institution-Based Trust, we measured the trust that users have on the Internet as a safe place to make monetary transactions, whereas the second subscale assessed trust in e-commerce platforms. We translated the three constructs into German and adapted the Trusting-Beliefs subscale to our research topic by using the word “Online-Shop” instead of “LegalAdvice.com”, which was originally used by McKnight et al. (2002). Participants responded on a seven-point Likert scale (1: completely disagree; 7: completely agree). In our sample, the internal consistency for Institution-Based Trust was $\alpha = .887$ and for Trusting-Beliefs $\alpha = .908$.

Figure 1. Example of an emotional *versus* a factual review. A: emotional review with high helpfulness votes. B: factual review with high helpfulness votes.



2.2.2.3. *Sociodemographic data.* Subjects were asked to answer some sociodemographic questions, such as age, gender, level of education, current occupation, as well as some questions about the participant's experience with online purchasing.

2.3. Statistical analyses

Statistical analyses were carried out in SPSS 23 for Windows (IBM SPSS statistics). Repeated measures ANOVA were used to assess hypotheses one and two. A mediation regression analysis was computed with MPLUS 6.12 (Muthén & Muthén, 2011) to assess the third hypothesis. A moderating regression analysis was performed with SPSS to assess the fourth hypothesis. The standard criteria of Hu and Bentler (1999) was applied for the evaluation of model fits, meaning that Standardized Root Mean Square Residuals (SRMR) below a value of .08 indicate good fit of the data. Comparative Fit Indices (CFI/TLI) above .95 show an excellent fit. Root Mean Square Error of Approximation (RMSEA) values below .08 with significance value below .05 indicate acceptable fit.

3. Results

Descriptive statistics can be observed in Table 1. We hypothesized that factual reviews are considered more trustworthy, less fake, and result in a higher purchase intention, when compared to an emotional writing style. We performed a repeated measures ANOVA with three measures (perceived trust, perceived fakeness, purchase intention) and two levels: emotional versus factual reviews. The mean differences are statistically significant for the perceived trust ($F(1, 123) = 201.655, p < .001$), fakeness perception ($F(1, 123) = 135.992, p < .001$), and purchase intention measures ($F(1, 123) = 127.952, p < .001$). Pairwise comparisons also showed significant differences ($p < .001$) for the three pairs, namely perceived trust, fakeness perception, and purchase intention for the three measures.

Table 1. Descriptive values

		Minimum	Maximum	M	SD
Emotional reviews					
	Trust—Emotional R.	1.10	6.00	2.96	0.95
	Fakeness—Emotional R.	1.00	5.80	3.43	1.04
	Purchase intention—Emotional R.	1.00	5.20	2.34	0.92
Factual reviews					
	Trust—Factual R.	2.00	6.00	4.23	0.88
	Fakeness—Factual R.	1.00	4.40	2.30	0.77
	Purchase intention—Factual R.	1.00	6.00	3.19	1.00
High cues					
	Trust—High cues	1.40	6.00	3.60	0.78
	Fakeness—High cues	1.00	5.10	2.86	0.75
	Purchase intention—High cues	1.00	4.60	2.75	0.90
Low cues					
	Trust—Low cues	1.50	6.00	3.58	0.84
	Fakeness—Low cues	1.00	4.70	2.87	0.81
	Purchase intention—Low cues	1.00	5.50	2.77	0.90
Totals					
	Perceived trust	1.60	6.00	3.59	0.76
	Perceived fakeness	1.00	4.60	2.87	0.74
	Purchase intention	1.00	4.75	2.76	0.86
Personal characteristics					
	Institution-based trust	1.80	6.13	4.20	0.88
	Trusting beliefs	1.00	6.82	3.96	1.00

Similarly, our second hypothesis aimed to test if high cues are considered more trustworthy, less fake, and result in a higher purchase intention when compared to low cues. A repeated measures ANOVA with three measures (perceived trust, perceived fakeness, purchase intention) and two levels (high cues and low cues) was performed. We found no significant differences after Greenhouse-Geisser corrections for the comparison between the perceived trust $F(1, 123) = .139, p = .710$, perceived fakeness $F(1, 123) = 0.17, p = .898$, nor purchase intention $F(1, 123) = 1.21, p = .728$. Therefore, we reject hypothesis two.

In order to test if there is a mediating effect of Trusting beliefs in the relation between Institution-based trust and the perceived trust of reviews with high cues, we also performed a mediation analysis (see Figure 2). Overall, the mediation model showed an excellent fit with the data (CFI = 1.00, TLI = 1.00, SRMR < .001, RMSEA < .001 with $p < .001$, $Chi < .001$ with $p < .001$). We found no direct effect between Institution-based trust and the perceived trust in high cues ($\beta = -.076, SE = .114, p < .504$). However, there is a direct effect of Institution-based trust on the mediating variable, Trusting beliefs ($\beta = .679, SE = .048, p < .001$). Additionally, Trusting beliefs also have a direct effect on the perceived trust of high-cued reviews ($\beta = .398, SE = .110, p < .001$). We accept hypothesis three, since the relationship between Institution-based trust and trust in high cues was mediated by Trusting beliefs ($\beta = .271, SE = .079, p = .001$) with a full mediation effect, which explained 12.3% of the variance of the dependent variable.

To test the fourth hypothesis, which aimed to test if the relation between perceived trust and purchase intention is moderated by the fakeness perception, we performed Pearson correlations with the three mentioned variables (see Table 2). Afterwards, we performed a moderated regression analysis which aimed to test if the relation between perceived trust and purchase intention is moderated by the fakeness perception. In the first step of the moderated regression analysis (see Table 3), the perceived trust (predictor) alone explained 11.6% of the variance of purchase intention, $F(1,122) = 16.05, p < .001$. In the second step, the perceived trust and the fakeness perception (moderator) together, increased significantly the variance explanation, $\Delta R^2 = .036, \Delta F(1, 121) = 5.18, p = .025$. In the third step, the interaction effects of these variables multiplied, significantly accounted for an increase in the explanation of the purchase intention variance, $\Delta R^2 = .028, \Delta F(1, 120) = 4.05, p < .046$. Overall, the regression model was significant and explained 18% of the variance, $F(3,120) = 8.80, p < .001$.

A simple slopes analysis (Figure 3) shows that both slopes have the same direction. The solid line shows how participants with high ratings in perceived fakeness ($t(4.45), p < .001$), combined with high perceived trust increase their purchase intention significantly. Similarly, the dashed line shows that participants with low ratings on perceived fakeness ($t(4.45), p < .001$), combined with high perceived trust in reviews, also increase the purchase intention significantly and this slope is even higher than the slope with low perceived fakeness.

Figure 2. Mediation analysis: results of the structural equation model with institution-based trust as independent variable, trusting beliefs as mediator, and trust- high cues as the dependent variable.

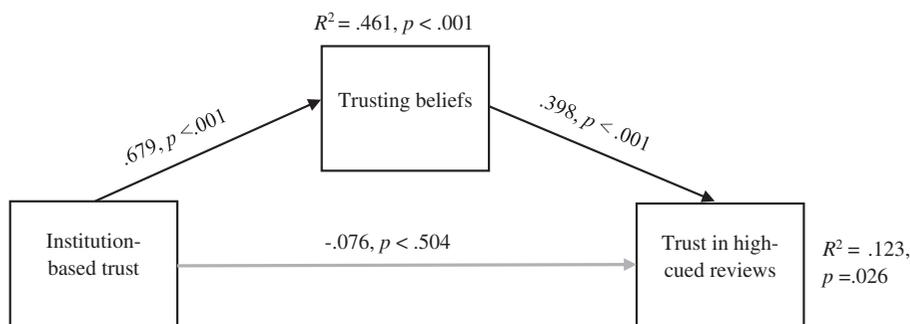


Table 2. Correlations

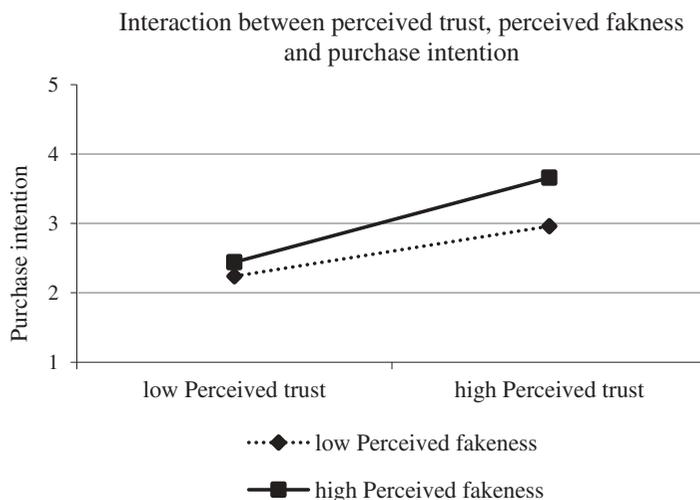
	Perceived trust	Perceived fakeness
Perceived trust		
Perceived fakeness	-.515**	
Purchase intention	.341**	-.012

** Correlation is significant at the 0.01 level (2-tailed).

Table 3. Moderated regression analyses

		β	T	p
Main effects	Perceived trust	.222	2.28	.025
	Perceived fakeness	.141	1.48	.141
Interaction	Perceived trust x Perceived fakeness	.191	2.01	.046

Figure 3. Simple slopes: results of the simple slopes analysis of the moderated regressions with perceived trust as independent variable, perceived fakeness as moderator, and purchase intention as the dependent variable.



4. Discussion

This study aims to observe if users tend to perceive online reviews as fake, as more or less trustworthy, and if these entail a higher or lower purchase intention, according to the review’s writing style and their trust cues. Regarding the writing style, we found that participants significantly rate factual reviews as more trustworthy, less fake, and entailing a higher purchase intention when compared to emotional reviews. This result is in line with previous studies (Grabner-Kräuter & Waiguny, 2015; Hong et al., 2016) that found similar effects when comparing emotional expressions to more detailed facts about the product or service (Filiari, 2016). When analyzing the trust cues, we found that the experimental variation (low or high) displayed to the participants represented no significant differences in their response. Even though we hypothesized that high trust cues would be considered more trustworthy, less fake, and would entail a higher purchase intention because of its intrinsic relation to the reviews (Wan, 2015), apparently, the writing style seems to be more important than the trust cue.

We propose several explanations for this result: First, the participants might not have been paying sufficient attention to the trust cues. On many online platforms, highly-rated reviews are typically displayed on top. Given that we showed only four (randomized) reviews in our experiments, participants might have considered all of them highly relevant. Second, the strength of the

trust cue might not have been high enough to have an impact on the participant's decision-making process. Perhaps additional trust cues (e.g., displaying a label such as "top reviewer" or "verified purchase") are needed for a measurable effect. Lastly, the trust cue itself might not have been important for the participants, or there might be other reasons that we were unable to account for in our study design. We will return to these aspects in the "Limitations" section.

Although our results highlight the relevance of the reviews' writing style over the trust cues, there is an interesting finding about the trust cues that arose when analyzing our third hypothesis. With a mediation analysis, we found an effect of participants' Institution-based trust on Trusting beliefs, as well as an effect of Trusting beliefs in their trust in high-cued reviews. This mediation was expected, since users' general trust in the Internet as a safe place to make transactions should influence their trust in the e-commerce platforms, which in turn should have an effect on their trust in the cues provided by an online shop. With this in mind, we infer that users' trust on relevant cues offered by the platforms depends on how trustworthy the users consider the e-commerce platforms to be, but also the Internet in general. Our results show how the combination of these trust stances result in a high trust on high-cued reviews. This mediation could not be tested for other combinations, since other variables, such as emotional and factual reviews, or low-cued reviews did not present significant correlations. This indicates that users' trust on the helpfulness votes can be traced back to the users' trust in e-commerce platforms and to their general trust in the internet (trusting beliefs), as a relatively safe commercial environment.

This result contrasts with the results of the first hypothesis, yet both are complementary. We found that the writing style has a higher effect on the perceived trust, fakeness of reviews, and on the purchase intention, when compared to the helpfulness votes. Although the effect is higher for the writing style, this does not necessarily mean that the trust cues are not important for the users. The helpfulness votes entail a relevance in interaction with users' trust in the online environment, as observed in the mediation analysis. Similarly, Liang et al. (2018) found an effect using the same questionnaires to measure trust, but using repurchase intention as a dependent variable. This indicates that users' trust on the online system is determinant to increase the user's trust on the cues provided by the platforms, and to increase the repurchase intention (Liang et al., 2018).

Regarding our fourth hypothesis, the regression analysis showed a significant moderation model that explained 18% of the variance of purchase intention and the simple slopes analysis showed significant differences as well. We observed that high values in perceived fakeness lead to a high purchase intention when combined with high values in perceived trust. This relation is even higher when compared to low scores in fakeness perception combined with high trust perception scores. In other words, it makes sense that higher trust entails a higher purchase intention (Luca & Zervas, 2016; Mrudula & Babu, 2018). However, we expected that low perceived fakeness in combination with a high perceived trust, would result in a higher purchase intention, since the fakeness perception affects the purchase intention negatively (Furner & Zinko, 2017; Lin & Lu, 2010; Zhang et al., 2017).

To understand this result, we need to take a step back and analyze the correlations between the three variables. We found a positive correlation between perceived trust and purchase intention. According to this, when users trust the reviews they read, they would most probably buy a product based on the trusted review. We also found a negative correlation between perceived trust and perceived fakeness, which shows that participants did not consider trustworthy those reviews that are also considered fake. However, there was no correlation between purchase intention and the fakeness perception. Apparently, the perceived fakeness of a review is not as important as its perceived trustworthiness. The trustworthiness of the review is the deciding variable to explain the resulting purchase intention. We think that users are aware of the increasing number of fake reviews on online platforms (Munzel, 2016). Therefore, they are more interested in the reviews that they consider trustworthy, which finally influences the purchase intention.

According to Zhang et al. (2017), trust and distrust are two different constructs that are negatively correlated and these have different effects on the purchase intention. In their study, distrust had a greater influence on purchase intention (Zhang et al., 2017), whereas we found a greater effect of perceived trust and a positive correlation to the purchase intention. These contrasting conclusions highlight the need for further research in order to clarify the relation between fakeness perception or generally untrustworthy reviews and purchase intention.

Unlike the study of Zhang et al. (2017), our study suggests that trust and fakeness perception are the same construct on a scale, due to the negative correlation observed in our analysis. We consider that, when a user thinks that a review is trustworthy, the same review cannot be fake. There are some characteristics of a review that move it along a scale that goes from fake to trustworthy. We tested that emotional reviews tend to be identified in the fake area of the scale. However, for the purchase intention, trustworthiness is more important than fakeness perception. Regarding the trust stances studied in this paper, we found that trust cues are connected to trusting beliefs and institution-based trust. Even though the trust cues seemed to lack relevance when compared to the emotionality of the review, we could observe that they play an important role when users also trust the platform and the Internet as a safe place to make transactions.

4.1. Limitations

This study shares similar caveats with other studies in this area of research. Our goal was to compare factual *versus* emotional writing styles and differences in the helpfulness votes. However, as mentioned in the introduction, the valence is another important aspect of a review. We only used positive comments in this study, because this kind of skewed distribution in which positive reviews prevail, is what users normally encounter on the Internet (Schoenmueller et al., 2018). Furthermore, participants saw only four reviews for each laptop, whereas e-commerce platforms usually display many more reviews. Additionally, users often have the possibility to filter reviews according to their rating, date, relation to trust cues, etc. Our experimental design is limited in this sense. We would suggest researchers in the topic to include the valence as an additional variable and to create a much more interactive task. However, these are two of the many aspects that play a role in e-commerce. For instance, Schoenmueller et al. (2018) highlight the role of product type and familiarity with the product. In this sense, it would then be necessary to conduct a study that includes many variables with their own factors, for instance: valence (positive or negative), writing style (factual or emotional), product type (experience or search), familiarity (unfamiliar or familiar), credibility source (known or unknown), display of the reviews depending on the design (fix task or interactive task with the possibility to filter), review relevance depending on the trust cues (Wan, 2015), among many other alternatives. The combination of all these variables can perhaps only be achieved in a real-life scenario by exploiting data crawled from an e-commerce platform. However, in such case, the psychological implications that result from an experimental design would be missing. In this sense, with a clean and simple design we were able to investigate further in different trust stances and how they relate to trust cues. Furthermore, we showed how emotional and factual writing styles of online reviews are related to trust and fakeness perceptions, and also how these influence the purchase intention.

4.2. Implications and future work

Our work could lead to practical implications on the design and placement of trust cues within user interfaces. Although the importance of the trust cues has been recognized in prior work (Utz et al., 2012), our results suggest that further research is needed to maximize their effect and salience. This topic is particularly relevant for recommender systems, which have been historically regarded by users as “black boxes” (Herlocker et al., 2000). By improving the design of trust cues and personalizing their usage and placement, the overall transparency of such systems could be improved (Barbu & Ziegler, 2017).

Our results on the fakeness perception of online reviews are interesting, but there is the need to further investigate this topic. Future studies could examine the influence of trustworthy and fake reviews on the purchase intention, in order to find out which one has a higher effect. It is necessary to note that we do not suggest an equivocal relation between emotionality of the review and fakeness. Our results suggest that reviews filled with emotional buzzwords, exclamation marks and capital letters tend to be perceived as fake when compared to a soberer writing style. In this sense, it would be interesting to research on the relation of fakeness perception and actual fake reviews as suggested by Hu, Bose, Koh, and Liu (2012). Furthermore, our results go beyond the trustworthiness-fakeness duality and also show how emotional wording influences purchase intention in e-commerce platforms. Similarly, the relation between trust cues and writing style can be investigated further. We found a stronger effect of the writing styles, but other kind of experimental designs or computational methods, like the analysis of crawled data, might also help to observe if the effect holds in other studies and why this is the case.

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