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Citation

Lelieveld, G. -J., & Hendriks, H. (2021). The interpersonal effects of distinct emotions in online reviews. *Cognition And Emotion*, 35(7), 1257-1280. doi:10.1080/02699931.2021.1947199

Version: Publisher's Version

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Downloaded from: <https://hdl.handle.net/1887/3238863>

Note: To cite this publication please use the final published version (if applicable).



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To cite this article: Gert-Jan Lelieveld & Hanneke Hendriks (2021) The interpersonal effects of distinct emotions in online reviews, *Cognition and Emotion*, 35:7, 1257-1280, DOI: [10.1080/02699931.2021.1947199](https://doi.org/10.1080/02699931.2021.1947199)

To link to this article: <https://doi.org/10.1080/02699931.2021.1947199>



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The interpersonal effects of distinct emotions in online reviews

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ABSTRACT

Emotional expressions in online reviews affect reviews' informative value. By comparing high and low arousal emotions with a negative and positive valence, the current research demonstrates that the effects of emotional expressions in online reviews are determined not by the level of arousal, but by the perceived rationality of the reviewer and the perceived appropriateness of the emotional expression. In a lab experiment ($N = 242$) among university students, and an online experiment ($N = 252$) on Prolific Academic involving native English speakers, participants read an online restaurant review with the negative emotions anger, disappointment, or disgust, or with the positive emotions happiness, excitement, or contentment. Results showed that readers of online reviews considered expressions of anger more inappropriate than expressions of disappointment or disgust; this led them to judge the reviewer as more irrational, which decreased the informative value of the review. As a consequence, angry reviews led to less negative restaurant evaluations and stronger intentions to visit the restaurant than reviews expressing disappointment or disgust. We found no differences between contentment and happiness (Study 1), or between contentment and excitement (Study 2). Our findings underscore the importance of studying the effects of discrete emotions in online reviews.

ARTICLE HISTORY



Received 18 December 2018
Revised 6 May 2021
Accepted 19 June 2021

KEYWORDS

Interpersonal effects of emotions; online reviews; eWOM; discrete emotions

In today's digital age, the internet offers many different ways for consumers to share their opinions and experiences with others, often in emotional terms. This form of electronic word of mouth (i.e. eWOM; Hennig-Thurau et al., 2004) is used extensively by a large number of consumers and therefore has the potential to significantly influence the success of products and services (Hennig-Thurau & Walsh, 2003). It is therefore not surprising that eWOM has received increased attention from researchers (for an overview, see Cantallops & Salvi, 2014; Huete-Alcocer, 2017; King et al., 2014), especially in the case of consumer reviews. Positive and negative consumer experiences that are shared online are often very emotional (Ullah et al., 2015) and extreme reviews are associated with more emotional words (Ullah et al., 2016).

Emotional expressions are thus very common in online reviews. Social functional analyses of emotions (Keltner & Haidt, 1999; Morris & Keltner, 2000; Parkinson, 1996; Van Kleef et al., 2010) posit that emotional expressions contain crucial information about the feelings and intentions of the expresser, which can have behavioural consequences for the observer of the emotion. Emotional expressions in online reviews may thus provide information that readers use as input for their decisions. Such expressions convey important information regarding the reviewed product or service, thereby increasing the informative value of the review. However, not all emotional expressions are equally informative. Some may even decrease the informative value of the review, because the emotional expressions may negatively

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 Supplemental data for this article can be accessed <https://doi.org/10.1080/02699931.2021.1947199>.

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influence the perception of the reviewer (e.g. Kim & Gupta, 2012; Li & Zhan, 2011). The current research investigates under which circumstances emotional expressions increase or decrease the informative value of a review. Until now, most research on the social functions of emotions has focused on how people respond to emotional expressions of others directed at themselves. In the current research, however, we investigated consumers' reactions to emotional expressions that were directed not at the consumer, but at the product or service being reviewed. By revealing that emotions differ in consistent ways in influencing the perceptions of the reviewer, the current research provides important insights into how emotions influence consumer judgment in online reviews.

Emotional expressions in online reviews

An important first step in examining the social functions of emotions in online reviews was made by Kim and Gupta (2012), who studied how consumers interpret emotional expressions in such reviews. They compared a review with negative or positive emotional expressions to a negative or positive review without emotional expressions. They concluded that negative emotional expressions decrease the informative value of the review, because consumers attribute the negative emotions to the reviewer's irrational disposition (Li & Zhan, 2011; see also Folse et al., 2016, who nuanced this view by showing that the results were specific to novice reviewers, and were not found for expert reviewers). Positive emotional expressions, on the other hand, were considered informative and influenced the informative value of the review in a similar way as positive reviews without emotional expressions did.

Other studies, however, showed different results. On the one hand, Ullah et al. (2015) showed that positive emotional expressions in movie reviews increased review helpfulness, and that negative emotional expressions had no effect. Ludwig et al. (2013), on the other hand, studying the semantic content of online reviews, found that an increase in positive affective content had only a small effect on sales conversion, whereas an increase in negative affective content had a larger impact on sales. Because of these inconsistent results, it is difficult to draw strong conclusions about how emotional expressions influence the informative value of online reviews.

One reason for these inconsistent findings could be that these studies regarded positive and negative emotions as global concepts, without taking into account that specific emotions have different effects on others. The notion that emotions are highly varied and complex, and cannot be reduced to a simple positive-negative distinction, has been increasingly accepted in the emotion literature. Already three decades ago, Russell's circumplex model of affect (1980) posited that emotions should not be placed only on the dimension of valence, but also on the dimension of arousal. A study by Yin et al. (2017) on the effects of emotional messages in online reviews did indeed show that the arousal level of emotional messages influenced the perceived helpfulness of the review. The researchers showed that if a review contained low arousing emotional messages, this increased the perceived helpfulness of the review, whereas if a review contained highly arousing emotional messages, this decreased its perceived helpfulness (see also Lee et al., 2017). Based on these insights it may thus be relevant to distinguish between high arousal and low arousal emotions when examining the interpersonal effects of emotional expressions in online reviews.

More recent social functional accounts of emotions (e.g. Lerner & Keltner, 2000; Van Kleef et al., 2010), however, have posited that it is not enough to only distinguish emotions based on valence and arousal. It is important to distinguish between different types of discrete emotions and to acknowledge that specific emotions convey specific information. Yin et al. (2014) examined how expressions of anxiety and anger in an online review affected the perceived helpfulness of the review. Although anxiety and anger can both be considered high arousal emotions, the authors' findings showed that anxious reviews were considered more helpful than angry reviews. These findings support the proposition that one should move beyond studying the effects of valence and arousal (see also Ahmad & Laroche, 2015; Malik & Hussain, 2017) and examine the influence of distinct emotions. Furthermore, it is important to study the underlying mechanisms that can predict how emotional expressions influence the informative value of a review. In the current research, we will focus specifically on two underlying mechanisms that have been shown to play a crucial role in the interpersonal effects of emotions: the perceived rationality of the reviewer and the perceived appropriateness of the emotional expression.

Perceived reviewer rationality and appropriateness of the emotion

Whether an emotional expression by a reviewer makes a review more or less informative to consumers, may first of all depend on the influence the emotional expression has on consumers' perception of the reviewer. In this respect, it is important to investigate the role of the *perceived rationality* of the reviewer expressing the emotion. Prior research on the effects of emotional expressions in online reviews has shown that the perceived rationality of the reviewer is a crucial underlying mechanism that can explain why emotions increase or decrease the informative value of a review. Kim and Gupta (2012) reasoned that if consumers attribute emotions to the reviewer's personal disposition rather than to the service or product reviewed, they may interpret them as indicators of irrationality or weak self-control, making the review less informative. Previous studies examining the role of perceived rationality in the interpersonal effects of emotions have focused exclusively on anger and happiness (Folse et al., 2016; Kim & Gupta, 2012; Li & Zhan, 2011; Xiao et al., 2018) and have shown that angry reviewers (and not happy reviewers) are considered irrational, which reduces the informative value of the review. The current research extends this work by also examining how other emotional expressions (e.g. of disappointment, disgust, contentment, and excitement) influence the perceived rationality of the reviewer.

A second way in which emotional expressions can influence the informative value of the review is by influencing the perception of the emotion expression itself. In this respect, it is important to investigate the role of the *perceived appropriateness* of the emotional expression, since in many cases the evaluation of an emotional expression is determined by its contextual appropriateness (for recent reviews, see Cheshin, 2020; Geddes & Lindebaum, 2020). Previous research on the interpersonal effects of emotions in online reviews has already argued that the perceived appropriateness of the emotion is an important underlying mechanism (Kim & Gupta, 2012; Xiao et al., 2018), but no research to date has empirically tested its role. According to the Emotion as Social Information (EASI) model by Van Kleef (2009), emotional expressions affect others via inferential processes (i.e. they provide information to observers about the feelings and cognitions of the expresser) and/or affective reactions (i.e. they elicit emotions in

observers). The model suggests that when it comes to responding to others' emotional expressions, the more inappropriate the expression is considered, the more strongly the response will be based on affective reactions (Van Kleef, 2014; Van Kleef et al., 2012). Thus the EASI model suggests that when emotional expressions in online reviews are considered inappropriate, consumers will respond emotionally and not take into account the information conveyed by the emotion, thereby reducing the informative value of the review.

However, based on previous research it could also be the case that the perceived appropriateness of the review does not directly affect the informative value of the review, but that it does so indirectly by influencing inferences about the rationality of the reviewer. In his review, Cheshin (2020) reasoned that the perceived appropriateness of the emotion can influence inferences drawn from emotional expressions which in turn may determine whether consumers respond positively or negatively. Thus, in the context of online reviews, it could be the case that the perceived appropriateness of emotional expressions not only influences the informative value directly, but also indirectly by influencing the perceived rationality of the reviewer. When emotions are considered inappropriate, observers may be more likely to attribute the inappropriate emotional expression to the person's disposition rather than focus on the circumstances that caused the person to express that emotion. Emotions that are considered inappropriate may then increase the perceived rationality and in turn decrease the informative value.

To investigate the role of the perceived rationality of the reviewer and the perceived appropriateness of the emotional expression in the interpersonal effects of emotions in online reviews, we systematically compared high and low arousal emotions with a negative and positive valence, and measured perceived reviewer rationality and appropriateness of the emotions as underlying mechanisms. The negative emotions we set out to examine were anger and disappointment, and the positive emotions we investigated were happiness and contentment.

Anger and disappointment in online reviews

In this research we compared the effects of discrete negative and positive emotional expressions with a

high and low level of arousal in the context of a restaurant review. For the negative emotions, we focused on anger and disappointment, two of the most often communicated negative emotions (Lelieveld et al., 2012; Lelieveld, Van Dijk, Van Beest, et al., 2013; Van Dijk & Zeelenberg, 2002a). Both emotions are reactions to undesirable behaviour (of others) (Lelieveld et al., 2011), which suggests that they are often communicated in (negative) online reviews. On closer inspection, however, the two emotions are quite distinct. Anger can be characterised as a high arousal emotion that elicits an approach motivation (Carver & Harmon-Jones, 2009; Harmon-Jones, 2004), and disappointment as a low arousal emotion that elicits an avoidance motivation (Van Dijk & Zeelenberg, 2002a, 2002b). In the context of online reviews, the two emotions may also differentially affect the perceived rationality of the reviewer and the perceived appropriateness of the emotion.

With regard to the perceived rationality, previous research has shown that reviewers expressing anger can be considered irrational. In consumer settings, angry consumers are perceived to be uncivil and to make suboptimal decisions (Bechwati & Morrin, 2003), and may thus often be perceived as irrational in social consumer settings. As noted above, when anger is expressed in an online review, consumers are likely to attribute the emotion to the irrationality of the reviewer (Kim & Gupta, 2012; Li & Zhan, 2011; Xiao et al., 2018). In line with such research (Folse et al., 2016; Kim & Gupta, 2012; Li & Zhan, 2011; Xiao et al., 2018), this perception may lead consumers to judge the review less informative. Compared to anger, disappointment has been shown to leave a more positive impression on others (Wubben et al., 2009), and to be perceived as less aggressive (Lelieveld, Van Dijk, Van Beest, et al., 2013) and uncivil (Van Dijk & Zeelenberg, 2002a). Because of this, consumers may be less likely to attribute expressions of disappointment to the irrationality of the reviewer, which will have an advantageous effect on the informative value of the review. We therefore expect that:

H1: Reviewers expressing anger will be perceived as more irrational than reviewers expressing disappointment, which will decrease the informative value of the review.

Besides a difference in perceived irrationality, anger and disappointment may also differ in the extent to which they are considered appropriate. Because anger has been shown to negatively affect

relationships (Averill, 1982), expressions of anger often have very strict display rules (Geddes & Callister, 2007). Previous research has shown that when these display rules are violated, expressions of anger can be perceived as inappropriate (Côté et al., 2013; Steinel et al., 2008). Glikson et al. (2019) studied expressions of anger in consumer settings (i.e. service failure settings) and showed that high intensity anger is considered more inappropriate than low intensity anger. These findings suggest that under specific circumstances anger may be considered inappropriate in consumer settings. In the current research, we argue that anger may be considered inappropriate when expressed in online reviews. Van't Riet et al. (2018) studied whether expressing anger is effective in persuading an audience to accept a certain point of view (which is one of the main goals of an online review, Hennig-Thurau et al., 2004). They showed that expressing anger when attempting to persuade others is considered inappropriate, because it communicates other-blame (see also Roseman et al., 1994); it is therefore considered uncivil and violates well-established social norms for the expression of opinions (cf. Mutz & Reeves, 2005). It is therefore plausible that anger expression could be perceived as inappropriate in the context of online reviews, which, as explained above, could lower the review's informative value.

Expressing disappointment, on the other hand, may be considered more appropriate in online reviews. Disappointment does not signal that others are to blame and is considered less aggressive and more civil than anger (Lelieveld, Van Dijk, Van Beest, et al., 2013). This suggests that disappointment in online reviews may not suffer from the same detrimental effects as anger. Indeed, Van Doorn et al. (2015) showed that expressing disappointment when trying to persuade others is considered more normative and appropriate than expressing anger. In online reviews, this could lead observers to take the information of the emotional expression into account more, which could increase the review's informative value. We therefore expect that:

H2: Expressions of anger will be perceived as more inappropriate than expressions of disappointment, which will decrease the informative value of the review.

However, as reasoned above, based on previous research it could also be the case that the perceived appropriateness of the review does not affect the informative value of the review directly, but indirectly,

by influencing the perceived rationality of the review. Indeed, Geddes and Callister (2007) have argued that when anger is considered inappropriate, observers will be more likely to attribute the inappropriate anger to the person's disposition rather than focus on the circumstances that caused the person to be angry (see also Kelley, 1973; Van't Riet et al., 2018). In line with the reasoning by Kim and Gupta (2012), this could influence the perceived rationality of the reviewer, which in turn could decrease the informative value of the review. We will thus also test whether:

H3: Expressions of anger will be perceived as more inappropriate than expressions of disappointment, which will decrease the perceived rationality of the reviewer, which in turn will decrease the informative value of the review.

Happiness and contentment in online reviews

For the positive emotions, we focused on happiness and contentment, two of the positive emotions most often experienced in consumer settings (Demir et al., 2009). Haslam (1995) characterised happiness as a high-arousal emotion (see also Fredrickson, 1998). Happiness has been shown to elicit an approach motivation (Van Kleef et al., 2010) and, when expressed, it signals cooperation and leaves a positive impression on others (Van Kleef et al., 2004). Compared to happiness, contentment can be characterised as a low-arousal emotion (Haslam, 1995). It arises in situations that are considered safe and as requiring a low degree of effort (Ellsworth & Smith, 1988). Contentment has been linked to inactivity and stimulates individuals to appreciate their current life circumstances and recent successes (Fredrickson, 1998).

The hypotheses regarding the differences between the two positive emotions in the context of the current research are of a more exploratory nature. In line with Kim and Gupta (2012), who manipulated a general positive emotional state similar to the experience of happiness, one may expect that expressions of happiness would show an increase in informative value, by positively influencing the perceived rationality of the reviewer. Kim and Gupta (2012) reasoned that when positive emotions are expressed, consumers are likely to attribute the emotion to the product or service. Reviewers expressing happiness may then be perceived as more rational, which will increase the informative value of the review.

With regard to the appropriateness, however, there are two possible hypotheses. On the one hand, previous research has shown that in consumer settings (i.e. service encounters) happy expressions with a high intensity were considered inappropriate and led to reduced trust (Cheshin et al., 2018). These effects on appropriateness, however, were specific to expressions of happiness of high intensity; moreover, the expressions in Cheshin et al.'s study were directed at the observer of the emotion, and not (as in the current studies) at the reviewed experience. Instead, we expect expressions of happiness in online reviews to be perceived as appropriate. Previous research has shown that public expressions of happiness are generally encouraged and considered civil responses since they foster positive social interaction (Diefendorff & Richard, 2003). In the context of online reviews, this may lead consumers to consider happy expressions as appropriate. Gunnery and Hall (2014) showed that expressing happiness when trying to persuade others is indeed considered appropriate (see also Wang et al., 2015). In online reviews, this could lead observers to take the information conveyed by the emotional expression into account more, thus increasing the review's informative value.

Although there is no research on the interpersonal effects of contentment in settings similar to that of the online review, there is no reason to expect that expressing contentment would decrease the informative value of the review by decreasing the perceived rationality and/or appropriateness. With regard to the perceived rationality of the reviewer, we expect that, as in the case of happiness, consumers are likely to attribute the emotion to the product or service, which will increase both the perceived rationality of the reviewer and the informative value of the review (Kim & Gupta, 2012). With regard to the perceived appropriateness, we also do not expect differences between contentment and happiness. Like happiness, expressions of contentment are considered peaceful, civil, and normative in social interactions (Cordaro et al., 2016). Expressing contentment in an online review may signal appreciation of the product or service reviewed (Fredrickson, 1998), which could be considered an appropriate response, which in turn could positively influence the informative value of the review. We therefore expect:

H4: Expressions of happiness and contentment will both positively influence the perceived rationality of the

reviewer, the perceived appropriateness of the emotional expression, and subsequently the informative value of the review.

The current research

In the current research we set out to investigate whether the effects of emotional expressions in online reviews are determined not (only) by the emotions' level of arousal, but (also) by their effects on the perceived rationality of the reviewer and the perceived appropriateness of the emotions. We tested our hypotheses in two experiments in which we used online reviews of a restaurant experience. In Study 1, we first focused solely on the mediating effects of perceived rationality, to facilitate comparison of the results with previous research showing that this was an important mediator (Folse et al., 2016; Kim & Gupta, 2012; Li & Zhan, 2011; Xiao et al., 2018). In Study 2, in addition to measuring perceived irrationality, we also measured the perceived appropriateness of the emotions in order to examine their mediating effects on informative value. In both studies, we also measured potential downstream consequences. If emotional expressions influence the informative value of an online review about a restaurant visit, this may in turn have consequences for the evaluation of the restaurant, and the intention to visit the restaurant. These consequences may thus differ for the different emotions we examine. If expressions of anger decrease the informative value of the review compared to expressions of disappointment, this could mean that the restaurant will be evaluated less negatively if anger is expressed than if disappointment is expressed, and that consumers will be more willing to visit the restaurant. If the informative value for both happiness and contentment is high, the restaurant may be evaluated positively, and the willingness to visit the restaurant will then also be strong.

Study 1

In Study 1, we examined the effects of the emotional expressions of anger, disappointment, happiness, and contentment on the informative value of an online restaurant review, and investigated the mediating effects of the perceived rationality of the reviewer. To facilitate comparison of our results with those of Kim and Gupta (2012), we also added two control conditions in which participants read a negative review or

a positive review that did not contain emotional expressions.

Method

Design and participants

The study used a 3 (emotion: high arousal vs. low arousal vs. control) \times 2 (valence: positive vs. negative) between-subjects design (i.e. resulting in positive reviews with expressions of happiness, contentment, and no emotions, and negative reviews with expressions of anger, disappointment, and no emotions). We aimed to collect data for 40 participants per cell, in line with sample sizes of previous research on the effects of emotional expressions in online reviews (generally between 30 and 40 per cell, see Kim & Gupta, 2012; Yin et al., 2014). Two hundred and forty-two students from Leiden University participated (185 females, $M_{\text{age}} = 20.33$, $SD = 1.93$). All procedures were approved by the ethical committee of the Institute of Psychology of Leiden University.

Procedure

Upon arrival to the lab, participants were led to a cubicle and were then provided with an online restaurant review on a website (supposedly) posted by an individual who previously visited the restaurant. After reading the review, participants completed the dependent measures and manipulation checks.¹ After answering these questions, participants were thoroughly debriefed and were paid €2,-.

Materials

The website containing the review resembled the website of a popular Dutch restaurant evaluation website called lens (see Figure 1). The reviews were pre-tested in a pilot study involving 108 participants (71 females, $M_{\text{age}} = 20.82$, $SD = 2.56$), none of whom participated in the main study (see supplementary material for the procedure and results of the pilot study). Based on the pilot study, we selected one review with four variations in emotions that led to the highest scores on the emotion it was intended to reflect and the lowest scores on the emotions it was not intended to reflect. We also added two variations without emotional expressions that served as control conditions. Half of the participants read a review that emphasised aspects of the restaurant that were positive; the other half read a review that emphasised the same aspects but in a negative way. Each of the four emotional reviews contained three sentences in which we added



Sam



Via online reservation

Very angry. I ate at De Watertoren in Leiden last week. We arrived there at around 6 o'clock. The restaurant is a bit hidden away in a narrow alley, but I had no problem finding it. The evening was not nice at all. I was very angry! 😡 The food was not tasty, and the music was not appropriate in this setting. I ordered a three-course menu and none of the dishes were good. Furthermore, the service was poor, and the atmosphere was negative. What I ended up paying was too much.

I was really angry.

Had dinner on January 19 2016



Share

Figure 1. The online review that was used in Study 1. The version depicted here contains expressions of anger. The other reviews contained expressions of either disappointment, happiness, or contentment.

our emotion manipulations of happiness (high arousal positive emotion), contentment (low arousal positive emotion), anger (high arousal negative emotion), and disappointment (low arousal negative emotion). These three sentences were removed in the two control conditions. The selected review read as follows (translated from Dutch):

Very [happy/content/angry/disappointed]

I ate at De Watertoren in Leiden last week. We arrived there at around 6 o'clock. The restaurant is a bit hidden away in a narrow alley, but I had no problem finding it. The evening was [very nice/not nice at all]. I was very [happy! /content! /angry! /disappointed!]. The food was [very/not] tasty, and the music was [very/not] appropriate in this setting. I ordered a three-course menu and [all/none] of the dishes were good. Furthermore, the service was [great/poor], and the atmosphere was [positive/negative]. What I ended up paying [wasn't even that high/was too much]. I was really [happy/content/angry/disappointed].

Dependent measures

Based on the variables measured by Kim and Gupta (2012), we assessed the informative value of the review and the perceived reviewer rationality. In addition, we also assessed the downstream consequences for the restaurant (i.e. the participant's restaurant evaluation and the intention to visit the restaurant).

Informative value. We assessed the informative value of the review by asking, on a 9-point scale (1 = *not at all*, 9 = *very much*), to what extent participants agreed with three statements: "This review was useful", "I learned a lot about the reviewed restaurant", and "I find the information provided in the review valuable". Participants' answers to the three statements were combined into an index of informative value ($\alpha = .92$).

Perceived reviewer rationality. We assessed the perceived reviewer rationality with a four-item 9-point scale (i.e. I find the writer of the review to be "irrational-rational", "unreasonable-reasonable", "unreliable-reliable", and "not credible-credible"); the responses were combined into an index of perceived reviewer rationality ($\alpha = .87$).

Manipulation check. Finally, to test whether our emotion manipulations were successful, we asked participants how happy, content, angry, or disappointed the reviewer was with several items each on 9-point scales (1 = *not at all*, 9 = *very much*; see Kim & Gupta, 2012). For happiness, we asked to what extent the reviewer was happy, delighted, or excited ($\alpha = .95$). For contentment, we asked to what extent the reviewer was content, satisfied, or fulfilled ($\alpha = .96$). For anger, we asked to what extent the reviewer was angry, mad, or irritated ($\alpha = .97$). For disappointment, we asked to what extent the reviewer was disappointed or let down ($\alpha = .93$).

Additional measures

Restaurant evaluation. We assessed participants' evaluation of the restaurant with a two-item (i.e. how would you judge the restaurant? "bad-good" and "negative-positive") 9-point scale; the responses were combined into an index of restaurant evaluation ($\alpha = .92$).

Intention to visit. We assessed participants' intention to visit the restaurant by asking participants to what extent they would want to visit the restaurant on a 9-point scale (1 = *not at all*, 9 = *very much*).

Results

We conducted 3 (emotion) \times 2 (valence) ANOVAs on our dependent variables to investigate the main and interaction effects of emotion and valence, and follow-up planned contrasts to study differences between specific conditions. Manipulation checks were conducted by comparing all six conditions. For the main dependent variables, we compared the three negative conditions to each other and the three positive conditions to each other. We did not compare conditions across valence, because not only did the emotional expressions differ for the positive and negative conditions, but also the actual content of the review was different (i.e. the reviews either described a negative or a positive experience). Because it is difficult to design an online review with content about which reviewers could for instance be both angry and happy, we decided to only compare within the valence conditions. Correlations on all main dependent variables can be found in Table 1.

Manipulation checks

Happiness. A 3 \times 2 ANOVA on the happiness ratings showed a significant main effect of valence, $F(1, 236) = 1267.65$, $p < .001$, partial $\eta^2 = .84$, a significant interaction effect, $F(2, 236) = 12.21$, $p < .001$, partial $\eta^2 = .09$, and a marginally significant main effect of emotion, $F(2, 236) = 2.85$, $p = .060$, partial $\eta^2 = .02$. Planned contrasts showed that participants in the happiness condition rated the reviewer as happier

($M = 7.85$, $SD = .83$) than did participants in the contentment ($M = 7.48$, $SD = .99$, $t(236) = 1.66$, $p = .099$, $d = .41$, 95% CI $[-.03, .77]$), anger ($M = 2.34$, $SD = 1.22$, $t(236) = 23.20$, $p < .001$, $d = 5.28$, 95% CI $[5.05, 5.97]$), disappointment ($M = 2.34$, $SD = .91$, $t(236) = 23.35$, $p < .001$, $d = 6.33$, 95% CI $[5.13, 5.90]$), positive control ($M = 6.66$, $SD = 1.12$, $t(236) = 5.04$, $p < .001$, $d = 1.21$, 95% CI $[-1.66, -.72]$), and negative control conditions ($M = 2.73$, $SD = 1.23$, $t(236) = 7.39$, $p < .001$, $d = 4.88$, 95% CI $[-5.58, -4.64]$).²

Contentment. A 3 \times 2 ANOVA on the contentment ratings showed a significant main effect of valence, $F(1, 236) = 1714.37$, $p < .001$, partial $\eta^2 = .88$, a significant interaction effect, $F(2, 236) = 7.98$, $p < .001$, partial $\eta^2 = .06$, and a marginally significant main effect of emotion, $F(2, 236) = 2.66$, $p = .072$, partial $\eta^2 = .02$. Planned contrasts showed that participants in the contentment condition rated the reviewer as more content ($M = 7.82$, $SD = .89$) than did participants in the anger ($M = 2.18$, $SD = 1.02$, $t(236) = 25.19$, $p < .001$, $d = 5.89$, 95% CI $[5.21, 6.07]$), disappointment ($M = 2.21$, $SD = 1.03$, $t(236) = 25.22$, $p < .001$, $d = 5.83$, 95% CI $[5.18, 6.04]$), positive control ($M = 7.03$, $SD = 1.03$, $t(236) = 3.54$, $p < .001$, $d = .82$, 95% CI $[-1.22, -.35]$), and negative control conditions ($M = 2.42$, $SD = 1.20$, $t(236) = 24.41$, $p < .001$, $d = 5.11$, 95% CI $[-5.83, -4.97]$), but as equally content as did participants in the happiness condition ($M = 7.95$, $SD = .79$, $t(236) = .59$, $p = .56$, $d = .15$, 95% CI $[-.24, .50]$).

Anger. A 3 \times 2 ANOVA on the anger ratings showed significant main effects of emotion, $F(2, 236) = 32.81$, $p < .001$, partial $\eta^2 = .22$, and valence, $F(1, 236) = 1459.28$, $p < .001$, partial $\eta^2 = .86$, and a significant interaction effect, $F(2, 236) = 30.77$, $p < .001$, partial $\eta^2 = .21$. Planned contrasts showed that participants in the anger condition rated the reviewer as angrier ($M = 7.78$, $SD = 1.01$) than did participants in the happiness ($M = 1.46$, $SD = .59$, $t(236) = 28.22$, $p < .001$, $d = 7.64$, 95% CI $[5.95, 6.69]$), contentment ($M = 1.36$, $SD = .57$, $t(236) = 28.65$, $p < .001$, $d = 7.83$, 95% CI $[6.06, 6.78]$), disappointment ($M = 5.33$, $SD = 1.41$, $t(236) = 10.88$, $p < .001$, $d = 2.00$, 95% CI $[5.13, 5.90]$), positive control ($M = 1.65$, $SD = .76$, $t(236) = 27.18$, $p < .001$, $d = 6.86$, 95% CI $[-6.53, -5.73]$), and negative control conditions ($M = 6.12$, $SD = 1.33$, $t(236) = 7.39$, $p < .001$, $d = 1.41$, 95% CI $[-2.05, -1.26]$).

Disappointment. A 3 \times 2 ANOVA on the disappointment ratings showed a significant main effect of

Table 1. Correlations between main dependent variables in Study 2.

| | 1 | 2 |
|------------------------------|--------|--------|
| 1. Perceived rationality | | |
| 2. Perceived appropriateness | .657** | |
| 3. Informative value | .710** | .554** |

Note: ** indicates $p < .001$

valence, $F(1, 236) = 1168.63$, $p < .001$, partial $\eta^2 = .83$, a significant interaction effect, $F(2, 236) = 5.51$, $p = .005$, partial $\eta^2 = .05$, but no significant main effect of emotion, $F(2, 236) = 1.27$, $p = .283$, partial $\eta^2 = .01$. Planned contrasts showed that participants in the disappointment condition rated the reviewer as more disappointed ($M = 7.63$, $SD = 1.42$) than did participants in the happiness ($M = 1.63$, $SD = .81$, $t(236) = 22.08$, $p < .001$, $d = 5.19$, 95% CI [5.49, 6.51]), contentment ($M = 1.62$, $SD = .90$, $t(236) = 22.13$, $p < .001$, $d = 5.06$, 95% CI [5.49, 6.53]), anger ($M = 7.00$, $SD = 1.46$, $t(236) = 2.28$, $p = .02$, $d = .47$, 95% CI [.03, 1.33]), positive control ($M = 2.10$, $SD = 1.07$, $t(236) = 20.24$, $p < .001$, $d = 4.40$, 95% CI [−6.06, −4.99]), and negative control conditions ($M = 6.83$, $SD = 1.49$, $t(236) = 2.93$, $p = .004$, $d = .55$, 95% CI [−1.33, −.26]).

Although, as in the pilot test, there was some overlap between the positive emotions, the manipulation checks showed that the emotional reviews had the intended effects on the perceived emotions of the reviewer.

Informative value

A 3×2 ANOVA on the informative value ratings showed significant main effects of emotion, $F(2, 236) = 7.47$, $p = .001$, partial $\eta^2 = .06$, and valence, $F(1, 236) = 8.94$, $p = .003$, partial $\eta^2 = .04$, and no significant interaction effect, $F(2, 236) = 2.20$, $p = .113$, partial $\eta^2 = .02$ (see Table 2 for an overview of the results). Planned comparisons showed that among the negative emotion conditions, reviews containing disappointment were considered significantly more informative ($M = 4.65$, $SD = 2.14$) than reviews containing anger ($M = 3.22$, $SD = 1.86$), $t(157) = -3.18$, $p = .002$, $d = .71$, 95% CI [−2.32, −.54]. Among the positive emotion conditions, informative value ratings did not differ between contentment ($M = 5.07$, $SD = 1.94$) and happiness ($M = 4.70$, $SD = 2.04$), $t(157) = -.83$, $p = .41$, $d = .19$, 95% CI [−1.24, .51].

Furthermore, planned comparisons showed that although the informative value ratings of negative control reviews ($M = 4.90$, $SD = 1.90$) did not differ from those of reviews containing disappointment, $t(236) = -.59$, $p = .56$, $d = .12$, 95% CI [−1.10, .59], the negative control reviews were more informative than reviews containing anger, $t(236) = -3.90$, $p < .001$, $d = .89$, 95% CI [−2.53, −.83]. The informative value ratings of positive control reviews ($M = 5.23$, $SD = 1.66$) did not differ from those of reviews containing happiness, $t(236) = -1.25$, $p = .21$, $d = .28$, 95% CI

[−1.38, .31], or contentment, $t(236) = -.39$, $p = .70$, $d = .09$, 95% CI [−1.02, .68].

Perceived rationality

A 3×2 ANOVA on the perceived rationality ratings showed significant main effects of emotion, $F(2, 236) = 15.03$, $p < .001$, partial $\eta^2 = .11$, and valence, $F(1, 236) = 80.90$, $p < .001$, partial $\eta^2 = .26$, and a significant interaction effect, $F(2, 236) = 4.30$, $p = .015$, partial $\eta^2 = .04$ (see Table 2 for an overview of the results). Planned comparisons showed that among the negative emotion conditions, reviewers communicating disappointment were considered significantly more rational ($M = 4.54$, $SD = 1.48$) than reviewers communicating anger ($M = 3.11$, $SD = 1.17$), $t(157) = -5.27$, $p < .001$, $d = 1.07$, 95% CI [−1.97, −.90]. Among the positive emotion conditions, rationality ratings did not differ between contentment ($M = 5.57$, $SD = .96$) and happiness ($M = 5.14$, $SD = 1.18$), $t(157) = -1.62$, $p = .11$, $d = .40$, 95% CI [−.96, .09].

Furthermore, planned comparisons showed that although the rationality ratings of negative control reviews ($M = 4.43$, $SD = 1.28$) did not differ from those of reviews containing disappointment, $t(236) = -.42$, $p = .68$, $d = .08$, 95% CI [−.42, .64], the reviewers were considered more rational than angry reviewers, $t(236) = 4.92$, $p < .001$, $d = 1.08$, 95% CI [−1.85, −.79]. The rationality ratings of positive control reviews ($M = 5.54$, $SD = 1.08$) did not differ from those of reviews containing happiness, $t(236) = 1.51$, $p = .13$, $d = .35$, 95% CI [−.92, .12], or contentment, $t(236) = -.11$, $p = .91$, $d = .03$, 95% CI [−.49, .55].

Mediation

We wanted to test whether perceived rationality mediated the effect of emotion on the informative value of the review (see Figure 2). Since we did not find any differences between the positive emotion conditions, we did not test for mediation in these conditions and decided to compare only the effects of the negative emotions. To this end, we used Hayes's (2018) PROCESS bootstrapping command with 10,000 iterations (model 4) to test the indirect effect of emotion on informative value through perceived rationality. We first compared the difference between the anger and disappointment conditions. The analysis revealed that the 95% CI of the indirect effect did not contain zero, $b = -1.46$, $SE = .33$, 95% CI [−2.18, −.89], thus establishing mediation. We then compared the difference between the anger and control conditions. Again, the analysis revealed

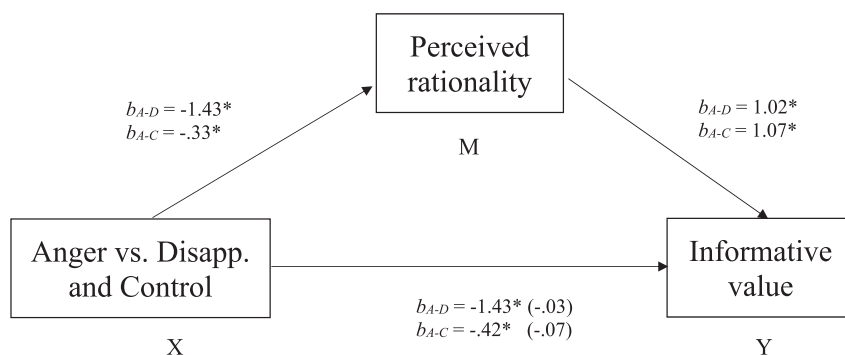


Figure 2. The mediation model (Model 4) tested in Study 1. Results showed that the indirect effect of emotion on informative value via perceived rationality was significant for the anger-disappointment difference (A-D) as well as for the anger-control difference (A-C). * indicates the regression weight was significant with $p < .05$.

that the 95% CI of the indirect effect did not contain zero, $b = -2.52$, $SE = .46$, 95% CI $[-3.45, -1.65]$. This indicates that the difference between the informative value of the angry reviews on the one hand and the disappointed and negative control reviews on the other hand can be explained by the perceived rationality of the reviewer (i.e. angry reviews are considered less informative than disappointed reviews and negative control reviews, because the reviewer was perceived to be more irrational).

Additional measures

Restaurant evaluations. A 3×2 ANOVA on the restaurant evaluation ratings showed significant main effects of emotion, $F(2, 236) = 3.83$, $p = .023$, partial $\eta^2 = .03$, and valence, $F(1, 236) = 312.47$, $p < .001$, partial $\eta^2 = .57$, and a significant interaction effect, $F(2, 236) = 4.12$, $p = .018$, partial $\eta^2 = .03$ (see Table 2 for an overview of the results). Planned comparisons showed that among the negative emotion conditions, participants evaluated the restaurant less positively when reviewers expressed disappointment ($M = 3.93$, $SD = 1.06$) than when reviewers expressed anger ($M = 4.65$, $SD = .94$), $t(157) = 3.45$, $p = .001$, $d = .72$, 95% CI $[-.31, 1.13]$. Among the positive emotion conditions, the evaluations did not differ between contentment

($M = 6.41$, $SD = .93$) and happiness ($M = 6.33$, $SD = .74$), $t(157) = .44$, $p = .66$, $d = .10$, 95% CI $[-.49, .31]$.

Furthermore, planned comparisons showed that although the evaluations of negative control reviews ($M = 3.92$, $SD = 1.14$) did not differ from those of reviews containing disappointment, $t(236) = -.07$, $p = .95$, $d = .01$, 95% CI $[-.40, .43]$, the evaluations of the negative control reviews were more positive than the evaluations of the angry review, $t(236) = -3.43$, $p = .001$, $d = .70$, 95% CI $[-.31, 1.15]$. The evaluations of positive control reviews ($M = 6.27$, $SD = .87$) did not differ from those of reviews containing happiness, $t(236) = -.28$, $p = .78$, $d = .07$, 95% CI $[-.34, .46]$, or contentment, $t(236) = -.70$, $p = .49$, $d = .16$, 95% CI $[-.25, .55]$.

Intention to visit. A 3×2 ANOVA on the intention to visit showed significant main effects of emotion, $F(2, 236) = 4.65$, $p = .010$, partial $\eta^2 = .04$, and valence, $F(1, 236) = 49.40$, $p < .001$, partial $\eta^2 = .17$, and no significant interaction effect, $F(2, 236) = 1.89$, $p = .153$, partial $\eta^2 = .02$ (see Table 2 for an overview of the results). Planned comparisons showed that among the negative emotion conditions, the intention to visit was weaker for participants who read the disappointed review ($M = 4.57$, $SD = 1.15$) than for participants who read the angry review ($M = 5.36$, $SD = 1.42$), $t(157) = 2.66$, $p = .008$, $d = .61$, 95%

Table 2. Means and SDs of the dependent variables (Study 1).

| | Positive | | | Anger | Negative | |
|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Happiness | Contentment | Control | | Disappointment | Control |
| Informative value | 4.70 ^a (2.04) | 5.07 ^a (1.94) | 5.23 ^a (1.66) | 3.22 ^a (1.86) | 4.65 ^b (2.14) | 4.90 ^b (1.90) |
| Perceived rationality | 5.14 ^a (1.18) | 5.57 ^a (.96) | 5.54 ^a (1.08) | 3.11 ^a (1.17) | 4.54 ^b (1.48) | 4.43 ^b (1.28) |
| Restaurant evaluations | 6.33 ^a (.74) | 6.41 ^a (.93) | 6.27 ^a (.87) | 4.65 ^a (.94) | 3.93 ^b (1.06) | 3.92 ^b (1.14) |
| Intention to visit | 6.15 ^a (1.30) | 6.20 ^a (1.36) | 5.75 ^a (1.34) | 5.36 ^a (1.42) | 4.57 ^b (1.15) | 4.44 ^b (1.61) |

Note: Means with different superscripts differ significantly across rows within the positive and negative emotion conditions ($ps < .05$).

CI [.20, 1.37]. Among the positive emotion conditions, the intentions did not differ between contentment ($M = 6.20$, $SD = 1.36$) and happiness ($M = 6.15$, $SD = 1.30$), $t(157) = -.17$, $p = .87$, $d = .04$, 95% CI [-.62, .52].

Furthermore, planned comparisons showed that although the intentions of participants who read the negative control reviews ($M = 4.44$, $SD = 1.61$) did not differ from those of participants who read the disappointed reviews, $t(236) = -.45$, $p = .66$, $d = .09$, 95% CI [-.46, .74], the intention to visit was weaker than for participants who read the angry review, $t(236) = -3.00$, $p = .003$, $d = .61$, 95% CI [.32, 1.52]. The intention ratings of positive control reviews ($M = 5.75$, $SD = 1.34$) did not differ from those of reviews containing happiness, $t(236) = -1.30$, $p = .20$, $d = .30$, 95% CI [-.18, .97], or contentment, $t(236) = -1.46$, $p = .15$, $d = .33$, 95% CI [-.13, 1.02].

Discussion

In line with our expectations, the results of Study 1 showed that the interpersonal effects of emotions in online reviews depended highly on the type of emotion that was expressed. Whereas Kim and Gupta (2012) suggested that communicating negative emotions in online reviews led the review to be less informative to readers, we showed that these effects were not the same for all negative emotions. Expressions of anger in a negative review did indeed lead readers to perceive the reviewer as irrational, thereby reducing the perceived informative value of the review. However, negative reviews containing expressions of disappointment led readers to judge the reviewer as relatively more rational, thereby increasing the informative value of the review compared to reviews containing anger. Additional measures showed that, as a consequence, disappointed reviews led to more negative evaluations of the restaurant and weaker intentions to visit the restaurant than angry reviews. We did not find any differences between happiness and contentment for our dependent variables. If a difference in arousal alone were to determine the effectiveness of emotional expressions in online reviews, one would expect to find not only differences among negative emotions, but also among positive emotions. This first study thus seems to suggest that it is specifically anger that reduces the informative value of the review, rather than simply the level of arousal conveyed by the emotions.

To obtain more evidence regarding the underlying mechanisms, we conducted a second study where we investigated the role not only of perceived rationality, but also of perceived appropriateness. We expected that anger expressions might be perceived as inappropriate in the context of online reviews, either because consumers would then respond more affectively and be less motivated to process the information conveyed by the emotion (Van Kleef et al., 2012; see *Hypothesis 2*), or because the perceived appropriateness could affect specific inferences, such that inappropriate emotional expressions might increase the perceived rationality of the reviewer (Geddes & Callister, 2007; see *Hypothesis 3*).

Moreover, to test whether it is specifically anger that reduces the informative value of the review and not all high-arousal emotions, in Study 2 we manipulated not only the negative emotions anger and disappointment, but also the high-arousal emotion disgust. In the context of an online (restaurant) review, disgust is a very relevant and often-communicated emotion (Ahmad & Laroche, 2015). It is considered a high arousal emotion (Tseng et al., 2016) that, like anger, can be perceived as a moral emotion (Hutcherson & Gross, 2011). Disgust may be appropriate to communicate in the context of an online review about a restaurant experience, as it is often expressed in response to both food intake (Rozin et al., 1999) and service encounters (Johnson & Zinkhan, 1991). Unlike anger, which can be seen as self-interested, aggressive towards others, and uncivil (Roseman et al., 1994), disgust communicates a more principled, moral motivation, and is appraised as less aggressive, more civil, and less self-serving (Kupfer & Giner-Sorolla, 2017). Because of this, consumers may be less likely to attribute expressions of disgust to the irrationality of the reviewer. Moreover, because expressions of disgust are considered to be less self-serving than anger, they may also be considered more normative in the context of persuasion. It could therefore be expected that disgust expressions could be perceived as more appropriate in the context of online reviews. In line with this reasoning, Ahmad and Laroche (2015), adopting a quantitative content analysis approach, showed that disgust had a positive effect on review helpfulness. By comparing expressions of the two high-arousal emotions disgust and anger and the low-arousal emotion disappointment, Study 2 was intended to provide more insight into whether review helpfulness is predicted more by discrete emotions or by the level of arousal in general. We therefore expected that:

H5: Expressions of disgust or disappointment in online reviews will increase the perceived rationality of the reviewer and will be considered more appropriate than expressions of anger, which will subsequently increase the informative value of the review.

For positive emotions, we have so far compared contentment to happiness. Our manipulation checks indicated that expressions of happiness also conveyed contentment, and vice versa. Although happiness is considered a high arousal emotion by some researchers (Fredrickson, 1998; Haslam, 1995), other researchers treat happiness as an emotion with a moderate level of arousal (Posner et al., 2005). To ensure that we compared the low arousal emotion contentment to a high arousal positive emotion, and to make sure we manipulate two different types of positive emotions, in Study 2 we pitted the effects of contentment against excitement instead of happiness. Excitement is a high arousal emotion (Russell, 1980) that consists of high levels of pleasure. It is often experienced in consumer settings (Wakefield & Baker, 1998) and has been shown to be highly contagious in everyday decision making (Parkinson & Simons, 2009). With regard to the perceived rationality of the reviewer, we expected that, as in the case of contentment, consumers would be likely to attribute the emotion to the product or service, which would increase the perceived rationality of the reviewer and thus the informative value of the review (Kim & Gupta, 2012). With regard to appropriateness, we also did not expect differences between excitement and contentment. Like happiness, expressions of excitement are considered civil and normative in social interactions (Parkinson & Simons, 2009). Expressions of excitement in an online review may signal enthusiasm and a positive attitude towards the product or service reviewed (Fredrickson, 1998); this could be considered an appropriate response, which in turn could positively influence the informative value of the review. In Study 2, we therefore expected that excitement would show similar effects to the effects of contentment found in Study 1, such that:

H6: Expressions of contentment and excitement will both positively influence the perceived rationality of the reviewer, the perceived appropriateness of the emotional expression, and subsequently the informative value of the review.

Study 2

In Study 2, we investigated how the negative emotions anger, disappointment, and disgust, and

the positive emotions excitement and contentment would influence the informative value of the review. We also measured the perceived rationality of the reviewer and the perceived appropriateness of the emotional expression to investigate the underlying mechanisms. We first tested the mediating effects of both mechanisms on the informative value of the review. Subsequently, we also tested whether the appropriateness of the expression influenced the perceived rationality of the reviewer, and in turn the informative value of the review. Moreover, by using the online research platform Prolific Academic, we aimed to replicate the findings of Study 1 in a different sample.

Method

Design and participants

The study used a between-subjects design with 5 emotion conditions (anger vs. disappointment vs. disgust vs. excitement vs. contentment). In line with Study 1, we aimed to collect data of 40 participants per condition. Two hundred and fifty-two subjects (182 females, $M_{\text{age}} = 36.01$, $SD = 12.68$) participated using the online research platform Prolific Academic (<https://www.prolific.ac/>). To make sure our participants understood our task, we selected only people from the United Kingdom and who were native speakers of English. All procedures were approved by the ethical committee of the Institute of Psychology of Leiden University.

Procedure

We used a similar procedure as in Study 1, but with some changes. First, we translated the experiment into English and changed the lay-out to resemble the international review website TripAdvisor. Second, we decided to remove any aspects of the review apart from the emotional expressions that might have increased the perceived arousal or intensity of the emotional expressions. For this reason, we did not use bold fonts and removed the emoticons and exclamation marks (see Figure 3). Third, as noted above, we added a disgust condition and replaced the happiness condition with an excitement condition. Finally, to prevent response artifacts and self-generated validity (see Feldman & Lynch, 1988; Schwarz, 1999), we presented the different dependent measures (see below) in a counterbalanced order. After reading the review and completing the dependent measures, participants filled out the

manipulation checks. After answering these questions, participants were thoroughly debriefed and were paid £1.20.

Dependent measures

We assessed the informative value of the review ($\alpha = .95$) and the perceived rationality ($\alpha = .94$) in the same way as in Study 1.

Appropriateness. In the current study we added an assessment of the appropriateness of the emotion. We used seven items taken from Cheshin et al. (2018) and adapted them to fit the online review setting (e.g. “The emotions the reviewer expressed were appropriate”; “The reviewer’s emotional display was odd” – reverse scored), and combined them into an index of appropriateness ($\alpha = .93$), with higher scores indicating greater appropriateness.

Manipulation checks. Our emotion manipulation checks now comprised two items per emotion. For anger, we asked to what extent the reviewer was angry or irritated ($\alpha = .96$). For disappointment, we asked to what extent the reviewer was disappointed or let down ($\alpha = .99$). For disgust, we asked to what extent the reviewer was disgusted or repulsed ($\alpha = .97$). For excitement, we asked to what extent the reviewer was excited or thrilled ($\alpha = .94$). For contentment, we asked to what extent the reviewer was content or satisfied ($\alpha = .98$). We now also assessed perceived valence and arousal to check whether the emotions represented the intended levels of valence and arousal. For valence, we asked to what extent the reviewer felt positive or negative (we reverse coded the perceived negative feelings and combined the positive and negative evaluations into an index for valence, $\alpha = .95$). For arousal, we adapted two items from Fontaine et al. (2007) to fit the online review setting. We asked to what extent the reviewer felt energised or aroused ($\alpha = .84$).

Additional measures

Restaurant evaluation. To obtain a more elaborate assessment of participants’ evaluation of the restaurant, instead of the two-item questionnaire of Study 1, we now assessed this variable with five items (“bad-good”, “negative-positive”, “unsatisfactory-satisfactory”, “not likeable-likeable”, and “unfavorable-favorable”) on a 9-point scale, which were combined into an index of restaurant evaluation ($\alpha = .99$).

Intention to visit. Instead of our 1-item measure of intentions, we now assessed the intention to visit the restaurant by asking participants to what extent they would want to visit the restaurant, and to what extent they would want to have dinner at the restaurant, on a 9-point scale (1 = *not at all*, 9 = *very much*), which we combined into one index of intentions to visit the restaurant ($\alpha = .95$).

Results

Manipulation checks

Anger. An ANOVA on the anger ratings showed a significant effect of emotion, $F(4, 247) = 397.44$, $p < .001$, partial $\eta^2 = .87$. Planned contrasts showed that participants in the anger condition rated the reviewer as angrier ($M = 8.23$, $SD = .86$) than did participants in the disappointment ($M = 6.17$, $SD = 1.77$, $t(247) = 8.64$, $p < .001$, $d = 1.48$, 95% CI $[-2.53, -1.59]$), disgust ($M = 7.21$, $SD = 1.61$, $t(247) = 4.25$, $p < .001$, $d = .79$, 95% CI $[-1.49, -.55]$), excitement ($M = 1.13$, $SD = .59$, $t(247) = 29.57$, $p < .001$, $d = 9.63$, 95% CI $[-7.57, -6.63]$), and contentment conditions ($M = 1.25$, $SD = .60$, $t(247) = 29.23$, $p < .001$, $d = 9.41$, 95% CI $[-7.46, -6.51]$).

Disappointment. An ANOVA on the disappointment ratings showed a significant effect of emotion, $F(4, 247) = 383.66$, $p < .001$, partial $\eta^2 = .86$. Planned contrasts showed that participants in the disappointment condition rated the reviewer as more disappointed ($M = 8.00$, $SD = 1.13$) than did participants in the anger ($M = 7.06$, $SD = 1.33$, $t(247) = -3.89$, $p < .001$, $d = .76$, 95% CI $[.46, 1.42]$), disgust ($M = 7.31$, $SD = 1.45$, $t(247) = -2.86$, $p < .001$, $d = .53$, 95% CI $[-1.16, -.23]$), excitement ($M = 1.14$, $SD = .60$, $t(247) = -28.39$, $p < .001$, $d = 7.58$, 95% CI $[-7.33, -6.40]$), and contentment conditions ($M = 1.63$, $SD = 1.36$, $t(247) = -26.50$, $p < .001$, $d = 5.09$, 95% CI $[-6.84, -5.91]$).

Disgust. An ANOVA on the disgust ratings showed a significant effect of emotion, $F(4, 247) = 163.54$, $p < .001$, partial $\eta^2 = .73$. Planned contrasts showed that participants in the disgust condition rated the reviewer as more disgusted ($M = 7.37$, $SD = 1.78$) than did participants in the anger ($M = 6.11$, $SD = 2.08$, $t(247) = 3.97$, $p < .001$, $d = .65$, 95% CI $[.64, 1.89]$), disappointment ($M = 4.70$, $SD = 2.15$, $t(247) = 8.46$, $p < .001$, $d = 1.35$, 95% CI $[2.11, 3.24]$), excitement

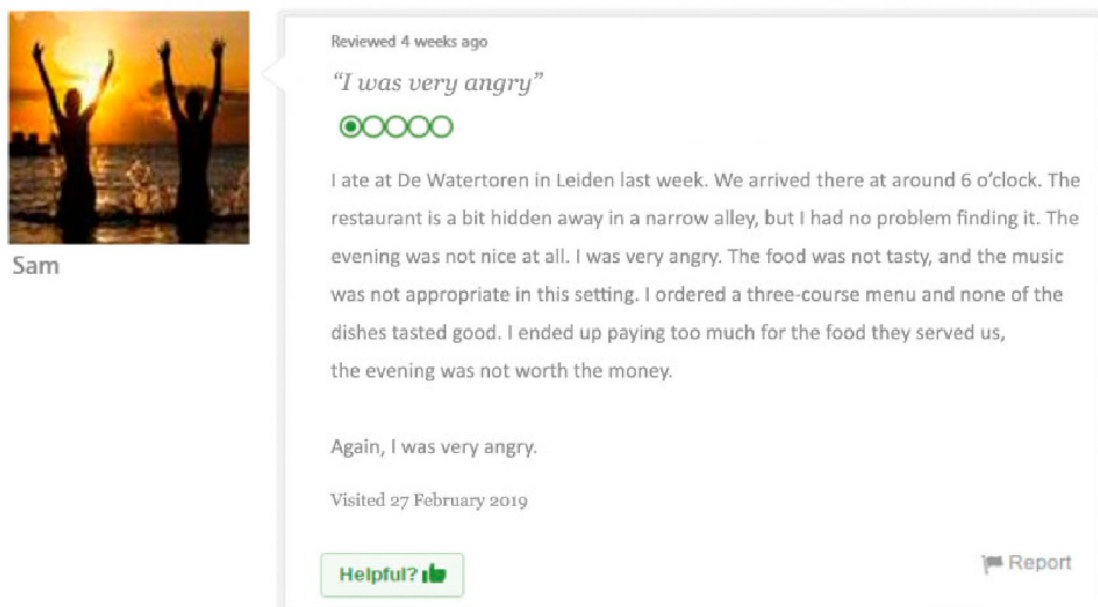


Figure 3. The online review that was used in Study 2. The version depicted here contains expressions of anger. The other reviews contained expressions of either disappointment, disgust, excitement, or contentment.

($M = 1.14$, $SD = .60$, $t(247) = 19.62$, $p < .001$, $d = 4.69$, 95% CI $[-6.67, -5.80]$), and contentment conditions ($M = 1.11$, $SD = .36$, $t(247) = 19.82$, $p < .001$, $d = 4.87$, 95% CI $[-6.70, -5.83]$).

Excitement. An ANOVA on the excitement ratings showed a significant effect of emotion, $F(4, 247) = 141.60$, $p < .001$, partial $\eta^2 = .70$. Planned contrasts showed that participants in the excitement condition rated the reviewer as more excited ($M = 7.25$, $SD = 1.81$) than did participants in the anger ($M = 1.44$, $SD = .72$, $t(247) = 19.23$, $p < .001$, $d = 4.22$, 95% CI $[5.22, 6.41]$), disappointment ($M = 1.46$, $SD = .75$, $t(247) = 19.25$, $p < .001$, $d = 4.18$, 95% CI $[5.14, 6.44]$), disgust ($M = 1.61$, $SD = .95$, $t(247) = 18.67$, $p < .001$, $d = 3.90$, 95% CI $[4.91, 6.37]$), and contentment conditions ($M = 4.06$, $SD = 2.47$, $t(247) = 10.61$, $p < .001$, $d = 1.47$, 95% CI $[2.60, 3.78]$).

Contentment. An ANOVA on the contentment ratings showed a significant effect of emotion, $F(4, 247) = 561.34$, $p < .001$, partial $\eta^2 = .90$. Planned contrasts showed that participants in the contentment condition rated the reviewer as more content ($M = 8.24$, $SD = 1.03$) than did participants in the anger ($M = 1.18$, $SD = .45$, $t(247) = 32.78$, $p < .001$, $d = 8.88$, 95% CI $[-7.48, -6.63]$), disappointment ($M = 1.42$, $SD = .86$,

$t(247) = 31.86$, $p < .001$, $d = 7.19$, 95% CI $[-7.25, -6.40]$), disgust ($M = 1.60$, $SD = 1.41$, $t(247) = 30.83$, $p < .001$, $d = 5.38$, 95% CI $[-7.06, -6.21]$), and excitement conditions ($M = 7.70$, $SD = 1.37$, $t(247) = 2.49$, $p = .014$, $d = .45$, 95% CI $[-.96, -.11]$).

Perceived valence. An ANOVA on the valence ratings showed a significant effect of emotion, $F(4, 247) = 600.53$, $p < .001$, partial $\eta^2 = .91$. Planned contrasts showed that valence ratings for angry ($M = 1.65$, $SD = 1.16$), disappointed ($M = 1.89$, $SD = 1.00$), and disgusted reviews ($M = 1.72$, $SD = 1.09$) were less positive (i.e. more negative) than valence ratings for excited ($M = 8.13$, $SD = .85$) and contented reviews ($M = 7.93$, $SD = .84$), $t_s > 49.78$, $p_s < .001$. Valence ratings for angry, disappointed, and disgusted reviews did not differ significantly, $t_s < 1.22$, $p_s > .22$. Valence ratings for excited and contented reviews also did not differ significantly, $t = 1.00$, $p = .318$.

Perceived arousal. An ANOVA on the arousal ratings showed a significant effect of emotion, $F(4, 247) = 40.59$, $p < .001$, partial $\eta^2 = .40$. Planned contrasts showed that arousal ratings for angry ($M = 5.23$, $SD = 2.21$), disgusted ($M = 5.58$, $SD = 2.02$), and excited reviews ($M = 5.40$, $SD = 1.84$) were higher than

arousal ratings for disappointed ($M = 1.71$, $SD = 1.20$) and contented reviews ($M = 3.36$, $SD = 1.98$), $t_s > 9.43$, $p_s < .001$. Arousal ratings for angry, disgusted, and excited reviews did not differ significantly, $t_s < .93$, $p_s > .35$. Arousal ratings for disappointed and contented reviews did differ significantly, $t = -4.45$, $p < .001$. These findings suggest that the emotion manipulations were successful.

Informative value

An ANOVA on informative value showed a significant effect of emotion, $F(4, 247) = 4.16$, $p = .003$, partial $\eta^2 = .06$ (see Table 3 for an overview of the results). Planned contrasts showed that among the negative emotions, reviews containing anger ($M = 4.43$, $SD = 2.24$) were considered significantly less informative than reviews containing disappointment ($M = 5.60$, $SD = 2.14$), $t(247) = -2.86$, $p = .005$, $d = .53$, 95% CI [.36, 1.97], and disgust ($M = 5.51$, $SD = 1.90$), $t(247) = -2.61$, $p = .010$, $d = .52$, 95% CI [.26, 1.88]. Informative value ratings did not differ between disappointment and disgust, $t(247) = .23$, $p = .817$, $d = .04$, 95% CI [-.88, .69]. Among the positive emotions, informative value ratings did not differ between excitement ($M = 5.97$, $SD = 1.92$) and contentment ($M = 5.72$, $SD = 2.06$), $t(247) = .62$, $p = .535$, $d = .13$, 95% CI [-.55, 1.06].

Perceived rationality

An ANOVA on perceived rationality showed a significant effect of emotion, $F(4, 247) = 4.16$, $p = .003$, partial $\eta^2 = .06$ (see Table 3 for an overview of the results). Planned contrasts showed that among the negative emotions, reviewers communicating anger ($M = 3.95$, $SD = 1.65$) were considered significantly less rational than reviewers communicating disappointment ($M = 5.35$, $SD = 1.57$), $t(247) = -4.79$, $p < .001$, $d = .87$, 95% CI [.83, 1.98], and disgust ($M = 5.17$, $SD = 1.42$), $t(247) = -4.13$, $p < .001$, $d = .79$, 95% CI [.64, 1.79]. Rationality ratings did not differ between disappointment and disgust, $t(247) = .64$, $p = .521$, $d = .12$, 95% CI [-.75, .37]. Among the positive emotions, rationality ratings did not differ between excitement ($M = 6.68$, $SD = 1.31$) and contentment ($M = 6.70$, $SD = 1.38$), $t(247) = -.06$, $p = .956$, $d = .01$, 95% CI [-.59, .56].

Appropriateness

An ANOVA on appropriateness showed a significant effect of emotion, $F(4, 247) = 5.08$, $p = .001$, partial $\eta^2 = .08$ (see Table 3 for an overview of the results). Planned contrasts showed that among the negative

emotions, anger ($M = 4.37$, $SD = 1.90$) was considered less appropriate than disappointment ($M = 5.84$, $SD = 1.69$), $t(247) = 4.01$, $p < .001$, $d = .82$, 95% CI [.75, 2.19], and disgust ($M = 5.30$, $SD = 1.75$), $t(247) = 2.54$, $p = .012$, $d = .51$, 95% CI [.21, 1.66]. Appropriateness ratings did not differ between disappointment and disgust, $t(247) = 1.46$, $p = .146$, $d = .31$, 95% CI [-1.25, .18]. Among the positive emotions, appropriateness ratings did not differ between excitement ($M = 5.34$, $SD = 1.88$) and contentment ($M = 5.76$, $SD = 1.97$), $t(247) = -1.15$, $p = .251$, $d = .22$, 95% CI [-1.14, .30].

Mediation

Our findings show differences for our dependent variables among the different negative emotions, but not among the positive emotions. For the negative emotions we wanted to test whether perceived rationality and/or appropriateness mediated the effect of emotion on the informative value of the review. To this end, we used Hayes's (2018) PROCESS bootstrapping command with 10,000 iterations (model 4) to test the indirect effect of emotion on informative value through perceived rationality and appropriateness. We first compared the difference between the anger and disappointment conditions. For perceived rationality, the analysis revealed that the 95% CI of the indirect effect did not contain zero ($B = 1.38$, $SE = .35$, 95% CI [.76, 2.15]), thus establishing mediation. For appropriateness, however, the analysis revealed that the 95% CI of the indirect effect did contain zero ($B = .16$, $SE = .19$, 95% CI [-.12, .65]), indicating that appropriateness may not explain the indirect effect. We then compared the difference between the anger and disgust conditions. For perceived rationality, the analysis revealed that the 95% CI of the indirect effect did not contain zero, $B = .48$, $SE = .15$, 95% CI [.24, .82], thus establishing mediation. For appropriateness, however, the analysis revealed the 95% CI of the indirect effect did contain zero, $B = .08$, $SE = .08$, 95% CI [-.01, .31], indicating that appropriateness may not explain the indirect effect.³

We further tested the role of appropriateness by examining whether appropriateness mediated the effect between emotion and perceived rationality. We used model 6 of Hayes's (2018) PROCESS bootstrapping command, to test whether the indirect effect of emotion on informative value runs serially via appropriateness and perceived rationality (see Figure 4). We first compared the difference between the anger and disappointment conditions. The serial

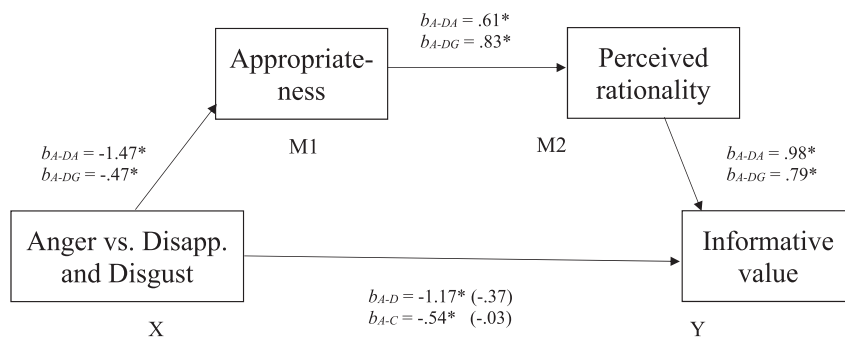


Figure 4. The serial mediation model (Model 6) tested in Study 2. Results showed that the indirect effect of emotion on informative value via appropriateness and perceived rationality was significant for the anger-disappointment difference (A-DA) as well as for the anger-disgust difference (A-DG). * indicates the regression weight was significant with $p < .05$.

mediation analysis showed that the indirect effect of emotion on informative value via appropriateness and perceived rationality was significant (i.e. the 95% CI of the indirect effect did not contain zero), $B = .88$, $SE = .24$, 95% CI [.48–1.47]. Moreover, we also compared this serial indirect effect with the indirect effect of perceived rationality and appropriateness separately. When comparing to the indirect effect of rationality, the analysis did not show a stronger indirect effect of the serial mediation, $B = .38$, $SE = .45$, 95% CI [–.50, 1.24]. When comparing to the indirect effect of appropriateness, the analysis did show a stronger indirect effect of the serial mediation, $B = -.71$, $SE = .29$, 95% CI [–1.53, –.28]. For the difference between the anger and disgust conditions, the same serial mediation analysis showed that the indirect effect of emotion on informative value via appropriateness and perceived rationality was significant, $B = .20$, $SE = .09$, 95% CI [.06, –.41]. When comparing to the indirect effect of rationality, the analysis did not show a stronger indirect effect of the serial mediation, $B = -.09$, $SE = .16$, 95% CI [–.42, .22]. When comparing to the indirect effect of appropriateness, the analysis did show a stronger indirect effect of the serial mediation, $B = -.29$, $SE = .13$, 95% CI [–.07, –.40].⁴

Additional measures

Restaurant evaluations. An ANOVA on the restaurant evaluations showed a significant effect of emotion, $F(4, 247) = 158.58$, $p < .001$, partial $\eta^2 = .72$ (see Table 3 for an overview of the results). Planned contrasts showed that among the negative emotions, participants evaluated the restaurant more positively when reviewers expressed anger ($M = 3.61$, $SD = 1.57$) than when reviewers expressed disappointment ($M = 3.05$, $SD = 1.48$), $t(247) = 2.11$, $p = .036$, $d = .37$, 95% CI [–1.09, .04], or disgust ($M = 2.95$, $SD = 1.31$), $t(247) = 2.45$, $p = .015$, $d = .46$, 95% CI [–1.19, –.13]. The evaluations did not differ between disappointment and disgust, $t(247) = .36$, $p = .723$, $d = .07$, 95% CI [–.60, .41]. Among the positive emotions, the evaluations did not differ between excitement ($M = 7.45$, $SD = 1.15$) and contentment ($M = 7.61$, $SD = 1.15$), $t(247) = .61$, $p = .541$, $d = .14$, 95% CI [–.69, .36].

Intention to visit. An ANOVA on the intention to visit showed a significant main effect of emotion, $F(4, 247) = 72.94$, $p < .001$, partial $\eta^2 = .54$ (see Table 3 for an overview of the results). Planned contrasts showed that among the negative emotion conditions, the intention to visit was stronger for participants who read the angry review ($M = 3.91$, $SD = 1.67$) than for

Table 3. Means and SDs of the dependent variables (Study 2).

| | Negative | | | Positive | |
|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Anger | Disappoint-ment | Disgust | Excitement | Contentment |
| Informative value | 4.43 ^a (2.24) | 5.60 ^b (2.14) | 5.51 ^b (1.90) | 5.97 ^a (1.92) | 5.72 ^a (2.06) |
| Perceived rationality | 3.95 ^a (1.65) | 5.35 ^b (1.57) | 5.17 ^b (1.42) | 6.68 ^a (1.31) | 6.70 ^a (1.38) |
| Appropriate-ness | 4.37 ^a (1.90) | 5.84 ^b (1.69) | 5.30 ^b (1.75) | 5.34 ^a (1.88) | 5.76 ^a (1.97) |
| Restaurant evaluations | 3.61 ^a (1.57) | 3.05 ^b (1.48) | 2.95 ^b (1.31) | 7.45 ^a (1.15) | 7.61 ^a (1.15) |
| Intention to visit | 3.91 ^a (1.67) | 2.85 ^b (1.54) | 3.08 ^b (1.54) | 6.54 ^a (1.78) | 6.89 ^a (1.47) |

Note: Means with different superscripts differ significantly across rows within the positive and negative emotion conditions ($ps < .05$).

participants who read the disappointed ($M = 2.85$, $SD = 1.54$), $t(247) = 3.31$, $p = .001$, $d = .66$, 95% CI $[-1.69, -.43]$, or disgusted review ($M = 3.08$, $SD = 1.54$), $t(247) = 2.59$, $p = .010$, $d = .52$, 95% CI $[-1.46, -.20]$. The intentions did not differ between disappointment and disgust, $t(247) = .71$, $p = .477$, $d = .15$, 95% CI $[-.40, .85]$. Among the positive emotions, the intentions did not differ between excitement ($M = 6.54$, $SD = 1.78$) and contentment ($M = 6.89$, $SD = 1.47$), $t(247) = 1.10$, $p = .271$, $d = .21$, 95% CI $[-.98, .28]$.

Discussion

The results of Study 2 again showed that the interpersonal effects of emotions in online reviews highly depended on the type of emotional expressions. As in Study 1, expressions of anger in a negative review reduced the informative value of the review more than expressions of disappointment. Moreover, in this study we now also compared reviews with expressions of anger with reviews with expressions of the high arousal emotion disgust, and showed that the negative effects are specific to anger and could not be generalised to all high arousal emotions. We also did not find differences, regarding the informative value of the review, between the low arousal positive emotion contentment and the high arousal positive emotion excitement, supporting the reasoning that it is not simply arousal that is driving the effects. This corroborates previous research that shows the importance of investigating specific emotions in the context of online reviews (Yin et al., 2014).

We also investigated the underlying mechanism for why expressions of anger in a review decrease the informative value, in comparison with other negative emotional expressions. We specifically tested the mediating effects of perceived rationality and appropriateness. Our analyses showed that, compared with expressions of disappointment and disgust, expressions of anger in online reviews led participants to perceive the reviewer as less rational and the expression as less appropriate. As in Study 1, the mediation analysis showed that perceived rationality can explain why anger reduced the informative value of the review. That is, angry reviewers were considered less rational than disappointed and disgusted reviewers, which decreased the informative value of the review. For appropriateness, the results are more nuanced. Our mediation analysis showed that the appropriateness of the emotional expression did not

directly influence the informative value. The results suggest that expressions of anger were considered more inappropriate than expressions of disappointment and disgust, and that this decreased the informative value of the review only via the perceived rationality of the reviewer. This is in line with Geddes and Callister (2007), who argued that when anger is considered inappropriate, observers will be more likely to attribute the inappropriate anger to the person's disposition than to focus on the circumstances that caused the person to be angry (see also Kelley, 1973; Van't Riet et al., 2018), thereby decreasing the perceived rationality of the reviewer. For more discussion about the role of appropriateness in the effects of anger in online reviews, see the General Discussion below. Finally, additional measures showed that expressions of disappointment and disgust not only increased participants' perception of the informative value of the review, but also led them to evaluate the restaurant more negatively than did expressions of anger. Furthermore, consumers' intentions to visit were weaker than if the review contained expressions of anger, which also indicates that the information in the review was taken into account more.⁵

General discussion

Social functional analyses of emotions (Keltner & Haidt, 1999; Morris & Keltner, 2000; Parkinson, 1996; Van Kleef et al., 2010) posit that emotional expressions convey crucial information about the feelings and intentions of the expresser, which can have behavioural consequences for the observer of the emotion. In the current research we investigated the social functions of emotional expressions in online reviews and showed that some emotions expressed in reviews are used by readers to guide their behaviour, while others are less informative. Whereas previous research (Kim & Gupta, 2012) has suggested that communicating negative emotions in reviews makes the review less informative, we show that these effects are specific to anger and cannot be generalised to other negative emotions like disappointment or disgust. We found that expressions of anger in a review were considered inappropriate and led readers to perceive the reviewer as irrational, thereby reducing the informative value of the review. In contrast, reviews containing expressions of disappointment or disgust were considered appropriate and led readers to judge the reviewer as

relatively more rational, thereby increasing the review's informative value.

These findings support the Emotions As Social Information (EASI; Van Kleef, 2009) account. In line with the EASI model, our findings show that it is important to distinguish between discrete emotions rather than comparing the effects of emotional expressions on the basis solely of arousal. Our findings do not support the theory that differences in arousal alone determine whether emotional expressions make online reviews informative. Reviews containing anger expressions were considered less informative than reviews containing disgust expressions, even though both were considered high arousal emotions. Moreover, we did not find any differences between the low arousal emotion contentment, and the high arousal emotions happiness and excitement. Rather, we show that in the context of online reviews, specific emotional expressions have specific effects on others, as is the case in many other contexts such as negotiations (Lelieveld, Van Dijk, Van Beest, et al., 2013) and team performance (Van Kleef et al., 2009). Our findings thus corroborate the propositions of the EASI model that it is essential not to consider only the valence or arousal when studying the social functions of emotions. It is important to acknowledge that specific emotions have specific effects on others (Lerner & Keltner, 2000; Tiedens & Linton, 2001; Van Kleef et al., 2010). This supports previous research on online reviews focusing only on different negative emotions (Yin et al., 2014), and studies focusing on discrete emotions using semantic analyses (Ahmad & Laroche, 2015) or field studies (Malik & Hussain, 2017).

Underlying mechanisms

Our findings regarding the two underlying mechanisms perceived rationality of the reviewer and perceived appropriateness of the emotional expression can be seen as an extension of the EASI model. According to this model, emotional expressions affect others via inferential processes and/or affective reactions. Whether observers process and/or use the information conveyed by an emotional expression or whether they respond emotionally, has been shown to depend both on the motivation to process the information and on the perceived appropriateness of the emotional expression (Van Kleef, 2009). Our findings indeed show that when

consumers perceive the emotional expression as inappropriate and the reviewer as irrational (which was the case for expressions of anger), the informative value of the review decreased.

The results of Study 2, however, showed that perceived appropriateness did not directly mediate the effects of emotion on informative value. Instead, perceived appropriateness affected the perceived rationality of the reviewer, and this in turn affected the informative value of the review. The perceived rationality of the reviewer thus seems to be a crucial factor for whether the appropriateness of the emotional expression leads consumers to take into account the information in the review. These findings extend propositions of the EASI model that posit that the appropriateness of the emotional expression more directly determines whether observers take into account the information conveyed by the emotion (Van Kleef, 2009). In line with the reasoning of Cheshin (2020), in our studies the perceived appropriateness affected specific inferences drawn from the emotional experience (i.e. the perceived rationality of the reviewer), rather than directly reducing the informative value. Cheshin (2020) argues that when emotional expressions are considered inappropriate but not rude in the context in which they are communicated, they may be perceived as benign behaviour that requires further inquiry. Because readers of the review were not directly interacting with the person expressing the emotion, and the expresser was someone abstract that readers knew little about, the inappropriateness of the emotion may have led readers to evaluate and make inferences about the person expressing the emotion. On the basis of those inferences (regarding the perceived rationality or irrationality of the reviewer), readers may have found the review less informative.

Although appropriateness and perceived rationality played an important role in the differences between anger and the other emotions, this does not necessarily mean that the arousal that the emotions communicated did not at all influence the informative value of the review. As discussed above in the Introduction, Yin et al. (2014) did show that expressed arousal plays an important role in perceptions of online reviews. Even though expressed arousal may not fully explain the differences between anger and disgust and the similarities between the positive emotions we tested, it could partly explain why angry expressions are considered more inappropriate than disappointed expressions.

For example, high arousal emotions in online reviews are seen as a means to vent a (negative) experience, and reviewers who communicate high-arousal emotions may be perceived as less objective (Park et al., 2007). This could be seen as inappropriate, which could in part explain the effects of anger. Future research could examine this further.

Our findings show that expressions of anger in online reviews were considered inappropriate, which led readers to perceive the reviewer as irrational, thereby reducing the review's informative value. This is interesting and counterintuitive, especially because when people feel wronged they are more likely to show anger than disappointment or disgust (Bougie et al., 2003). The fact that anger was considered inappropriate, however, does not mean that expressions of anger in online reviews are always considered inappropriate and are never helpful. Kim and Gupta (2012) already showed that when multiple convergent expressions of anger are present in multiple user reviews, such expressions actually increase the informative value of the review. Furthermore, Xiao et al. (2018) show that though angry expressions in reviews lead consumers to perceive the reviewer as irrational, at the same time anger also signals problem seriousness. They show that the intensity of the anger and the innovativeness of the product determine whether anger affects consumers via rationality judgments (thereby reducing the review's informative value) or via signalling the seriousness of the problem (thereby increasing informative value). Glikson et al. (2019) also found that in service failure settings intense anger is considered inappropriate, but only for specific cultures (i.e. cultures that are highly accepting of power inequalities and status differences). This suggests that the appropriateness of anger depends not only on the intensity of the expression, but also on the cultural background of the expresser and observer (Hareli et al., 2015). This is supported by research on emotional expressions in negotiations, which shows that anger expressions are considered inappropriate in East Asian cultures (Adam et al., 2010; Adam & Shirako, 2013). Future research could investigate in more detail how the cultural background of the observer and expresser of the emotion may moderate the effects of anger in online reviews.

Where the underlying mechanisms are concerned, appropriateness and rationality judgments are not the only mechanisms that may explain the negative effects of anger on review helpfulness. Yin et al.

(2014), for instance, show that anger decreases review helpfulness because angry reviewers are expected to have devoted less cognitive effort to the review task. Similarly, in the context of complaints Hareli et al. (2009) found that for justified complaints, expressions of anger do not provide additional information and are therefore discounted, which suggests that such expressions are considered too much information, which can be off-putting. In addition to emotion appropriateness and reviewer rationality, future research could also include measurements of problem seriousness, perceived cognitive effort, and/or the tendency to perceive the complaints as redundant information, to examine how these different mechanisms relate to each other when readers judge the informative value of online reviews.

Future research and limitations

In line with previous studies (e.g. Ahmad & Laroche, 2015; Folse et al., 2016; Kim & Gupta, 2012; Yin et al., 2014), the main focus of the current research was on how different emotional expressions in online reviews affect the informative value of the review. Additional analyses also showed the subsequent consequences on participants' restaurant evaluations and their intentions to visit the restaurant. When anger was expressed (and reviews were not considered informative), participants' evaluations were less negative and their intentions to visit the restaurant were stronger than when disappointment or disgust was expressed. Although these exploratory findings accord with the informative value ratings and may very well predict real behaviour, we should emphasise that the evaluations and intentions were based on a single review with self-reports. One should therefore interpret these findings with caution. Future research could extend the current findings by creating a website with multiple reviews and/or study actual behaviour (e.g. actual restaurant visits or recommendations to friends).

In the current studies, we examined the social functions of discrete emotional expressions in online reviews about experiential goods (i.e. a restaurant visit). Most previous work, however, focused on product evaluations (e.g. Kim & Gupta, 2012; Yin et al., 2014). Purchasing experiential goods is often considered a more emotional experience than purchasing material goods (Nicolao et al., 2009). One may thus wonder whether expressing emotions in reviews about experiential goods may be considered

more appropriate and may increase the informative value of the review more than in reviews about material goods. Our findings, however, show that with regard to the expression of anger we replicate earlier findings, such that anger expressions reduced the review's informative value, suggesting that regardless of the nature of the reviewed good (experiential or material), expressions of anger in online reviews affect readers differently from expressions of disappointment. Future research, however, could directly compare the interpersonal effects of emotions in online reviews about experiential vs. material goods, to see whether the results are similar across different types of goods.

Our findings replicate earlier findings on online reviews focusing on expressions of anger (e.g. Kim & Gupta, 2012; Yin et al., 2014), happiness (Ahmad & Laroche, 2015; Kim & Gupta, 2012), and disgust (Ahmad & Laroche, 2015), and extend previous research by showing how expressions of disappointment, contentment, and excitement influence consumers. Moreover, the current findings extend the literature on the interpersonal effects of anger and disappointment, two emotions that are often compared to each other. Previous research has mainly compared the social functions of anger and disappointment in negotiations (Lelieveld et al., 2011, 2012; Lelieveld, Van Dijk, Van Beest, et al., 2013; Van Kleef & Van Lange, 2008) and economic games (Klapwijk et al., 2016; Lelieveld, Van Dijk, Guroglu, et al., 2013), where the emotions were directed at the observer of the emotion. The current studies on emotional expressions in consumer reviews offer an important extension on social functional analyses of emotions like the EASI model (Van Kleef et al., 2009), by showing that even when the emotion is directed at an (experiential) good in eWOM, and not at the observer, observers' responses to expressions of anger differ from their responses to expressions of disappointment.

It is not necessarily the case, however, that emotional expressions show the same effects when they are or are not directed at an observer. Negotiation research has shown that expressions of anger and disappointment are dependent on whether the emotion is directed at the person or at the situation (Lelieveld et al., 2011). Moreover, in the context of customer service failures, where expressions are indeed directed at the observer, in specific circumstances anger expressions can help the complainer to come across as more credible (Hareli et al., 2009) and

receiving better service (Glikson et al., 2019). This is not in line with our current findings – and those of others (Kim & Gupta, 2012; Yin et al., 2014) – that anger expressions reduce the informative value in situations where anger is not directed at the observer. Perhaps the fact that online reviews are more anonymous and have larger consequences for a company because the audience is greater may lead expressions of anger to be considered more inappropriate. Future research could investigate the differences between interpersonal complaints and online reviews in more detail.

In conclusion, our findings indicate that expressing disappointment or disgust in online reviews is more influential than expressing anger, by increasing the informative value for the reader and their intention to purchase the (experiential) good. It may be important for review websites like TripAdvisor to provide tools for reviewers to express their emotions in a more restrained manner, so that they can communicate their negative experience with expressions of disappointment or disgust. Review websites could, for instance, provide emoticons of disappointment or disgust that reviewers could choose from when writing reviews (see recommendations by Kim & Gupta, 2012). This increases the likelihood that reviewers will choose to communicate a more effective emotion like disappointment, which will have a bigger impact on their readers. In the end, this may be beneficial for reviewers as well as consumers.

Notes

1. See supplementary material for other questions we asked, including results. Moreover, all materials and datasets used in our studies are publicly available on the Open Science Framework, using the following link: https://osf.io/zvkuc/?view_only=0074ff9664fa4edb92b33680ca8f274d
2. We also tested an alternative mediated moderation model with rationality as dependent variable and informative value as mediator. Results showed that the indirect effect was not significant ($a \times b = .39$, $SE = .22$, 95% CI $[-.03, .85]$).
3. To explore whether the perceived arousal of the emotions mediated the effects between anger and disappointment, we also added the perceived arousal ratings as an additional mediator (in addition to perceived rationality and appropriateness) in our mediation analyses. Similarly to the indirect effects of appropriateness, the analysis regarding perceived arousal revealed that the 95% CI did contain zero, $B = -.12$, $SE = .31$, 95% CI $[-.78, .45]$, indicating that perceived arousal

may not explain the indirect effect. For the difference between anger and disgust, we did not find any differences regarding perceived arousal. Indeed, the mediation analysis revealed that the 95% CI did contain zero, $B = .02$, $SE = .03$, 95% CI $[-.02, .12]$, indicating that perceived arousal may not explain the difference between anger and disgust regarding informative value.

4. We also tested an alternative serial mediation model where the indirect effect of emotion on informative value runs via perceived rationality first and then via appropriateness. For the difference between anger and disappointment, results showed that this indirect effect was not significant, $a \times b = .12$, $SE = .13$, 95% CI $[-.09, .45]$. For the difference between anger and disgust, results also showed that the indirect effect was not significant, $a \times b = .08$, $SE = .07$, 95% CI $[-.01, .26]$.
5. The results of Study 1 and 2 show that to convey information in an online review effectively, it is better for reviewers to communicate disappointment than anger. One may reason, however, that this difference between angry and disappointed reviews may depend on the gender of the reviewer. Research has shown that expressions of emotions related to the assertion of power, like anger, are considered more appropriate if expressed by men (Lewis, 2000), whereas expressions of emotions related to weakness and compassion, like disappointment, are considered more appropriate if expressed by women (Briton & Hall, 1995). We therefore conducted a third study where we manipulated the gender of the reviewer. In that third study we replicated the effects of anger and disappointment on informative value, regardless of whether the emotions were expressed by men or women (see supplementary materials for the complete third study, including methods and results).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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