Online Venting: The Impact of Temporal Proximity Cues and Emotionality on Perceptions of Negative Online Review Value

Abstract

Because negative reviews have the potential to dissuade consumers, brands necessarily worry about them. Prior literature generally supports the notion that negative information offers greater value to and influences consumers more powerfully, yet in specific circumstances, negative online reviews might be less helpful and influential. As the current research establishes, when negative reviews exhibit near (vs. far) temporal proximity cues, relative to a reviewed experience with a product or service, *and* some degree of negative emotionality, consumers tend to discount them in their decision-making. Such outcomes seemingly arise because consumers identify a negative review that combines near temporal proximity (i.e., posted or written in a way that makes the experience feel temporally close) with negative emotionality as a form of "venting." They then ascribe the information in the negative review to reviewer-related rather than to relevant product or service quality attributes. Consistent evidence for this venting discount effect emerges from analyses of actual hotel reviews from TripAdvisor, as well as multiple experimental studies, involving both products and services.

Keywords: online reviews, word of mouth, negative information, temporal proximity, venting, causal attribution

When a diner has a negative experience at a restaurant—dubious food, rude staff, a long wait—a typical response may be to write a negative online review, which provides an opportunity to express frustration with a negative consumption experience (Hydock, Chen, and Carlson 2020). Such venting, or letting off steam, helps people regulate their negative emotions (Baumeister et al. 2007) and release the negative tension, which can continue to be felt actively even after its cause has ended (e.g., after they have left the restaurant). Thus, venting involves sharing negative feelings while they remain salient to the consumer, which implies that it occurs soon after the experience that evokes those feelings.

Due to the ease of writing them, online reviews offer a particularly relevant mechanism for venting about negative recent experiences. Venting within a negative review can be emotionally beneficial or cathartic for the customer. Yet such reviews might prove less helpful to audiences. In particular, reviews about negative experiences seemingly written in a short timeframe after they happened arguably might appear less objective or informative about the focal product or service and instead seem to be driven primarily by the psychological relief that the dissatisfied customer attains from venting. If audiences recognize this possibility, then they might use the temporal proximity of the negative review as an indicator that informs their assessments and usage of the review. That is, the combination of the expression of negative emotions and salient temporal proximity cues signals venting, which may cause consumers to discount the information provided by negative reviews. To clarify this potential *venting discount effect*, we investigate if and when consumers identify and leverage temporal proximity cues in negative online reviews to determine if the reviewer is venting. In turn, we consider whether the causal attributions that these audiences make, once they perceive the review as venting, drive their subsequent decisions.

By pursuing such insights, this research makes several contributions. In particular, we extend insights into how different cues, available in online reviews, affect readers' evaluations (Grewal and Stephen 2019; Ludwig et al. 2013; Mudambi and Schuff 2010). Focusing explicitly on the context of negative reviews, we establish that temporal proximity cues, when combined with some non-zero degree of emotional writing, trigger perceptions of venting. Those perceptions in turn affect the audience's attributions of the source of the negative information to reviewer-related attributes, rather than the reviewed product or service. The resulting review discounting can have detrimental effects; for example, audiences might disregard helpful information about products and services they are actively considering purchasing.

This exploration of venting in online reviews also represents a response to calls for research into the effects of emotions on consumers' engagement with online reviews (Pocchiari, Prosperio, and Dover 2024); particularly negative reviews (Rocklage and Fazio 2020). More broadly, we advance research into negative word-of-mouth (WOM) effects in online reviews. Generally, people deem negative information more valuable than positive information (i.e., negativity bias; Baumeister et al. 2001). Specifically, negative online reviews exert greater impacts on consumer decision-making and evaluations of reviewed products and services, seemingly because they appear more diagnostic (Mizerski 1982). While some nascent research acknowledges that negative reviews are not inherently detrimental (e.g., Allard, Dunn, and White 2020; McGraw, Warren, and Kan 2015), we lack rich insight into which factors *reduce* the perceived diagnostic value of negative information shared through WOM (Kupor and Tormala 2018; Laczniak, DeCarlo, and Ramaswami 2001). As we propose and demonstrate, the venting-related causal attribution process that audiences undergo in response to review-provided cues

(i.e., temporal proximity and elevated negative emotional expressions) can explain when and why readers engage in review discounting.

Finally, we contribute to venting literature, in two main ways. First, venting largely has been defined as the expression of negative feelings (Bushman 2002; Dalebroux, Goldstein, and Winner 2008; Parlamis 2012). By proposing a temporal consideration as well, we offer new evidence regarding how attributions of venting behavior get sparked. Beyond the notion that venting entails expelling actively felt negative emotions (Wetzer, Zeelenberg, and Pieters 2007), we show explicitly that temporal proximity cues increase assumptions that negative emotional expressions constitute venting. Thus, readers assess negative emotional expressions that occur nearer to a negative experience as more likely to be venting than other types of negative emotional expression. Second, rather than prioritizing the antecedents and consequences of venting behaviors, or why someone may vent (e.g., wanting revenge, emotional support, emotional release; Bennett 1991; Bushman 2002; Kähr et al. 2016; Menon and Dubé 2007), we focus on how audiences, in an online review context, interpret information that they identify as indicative of venting behavior. Venting is a natural and common human behavior, and online reviews provide a convenient venue for such behavior. Therefore, it makes both theoretical and practical sense to examine audience perceptions of venting in this context.

Conceptual Framework

Prior research generally suggests that positive reviews lead to better outcomes and negative reviews lead to worse firm outcomes (Chevalier and Mayzlin 2006; Liu 2006; Zhu and Zhang 2010). As negativity bias literature predicts, “bad things produce larger, more consistent,

more multifaceted, or more lasting effects than good things" (Baumeister et al. 2001, p. 325). The actual influence of online reviews on various outcomes depends on more numerous, specific elements though (for a review, see Babić Rosario, de Valk, and Sotgiu 2020). For example, more intensely negative reviews appear more useful and potentially more informative to readers (Cao, Duan, and Gan 2011; Sen and Lerman 2007; Willemsen et al. 2011). The negativity bias also might stem from review scarcity (Ludwig et al. 2013) and extremity (Mudambi and Schuff 2010), such that negative feedback tends to be less common than positive input. Because consumers tend to perceive negative information as more diagnostic and assume that positive reviews simply reflect social norms (Mizerski 1982), they might anticipate that negative reviews offer more meaningful information than positive reviews (Wu 2013). Furthermore, readers make different attributions of review-writing motivations for negative versus positive reviews: They typically attribute information in negative reviews to the actual service or experience but assign positive reviews and their underlying motivations more to the reviewer (Epley et al. 2004).

Despite the prevalence of such beliefs and biases, not all negative reviews are diagnostic or rooted in actual experiences. Personal, idiosyncratic, reviewer-based motivations (e.g., revenge, emotional regulation) also might prompt negative reviews (Sundaram, Mitra, and Webster 1998). Therefore, inferences about the reviewers' motivations should influence the extent to which audiences accept negative reviews as legitimate information versus discounting them. We further anticipate that such inferences might be based on two readily observable, ubiquitous cues available in online reviews: temporal proximity and emotionality. As we argue subsequently, a specific combination of these cues maps to colloquial notions of venting, such that they can affect how consumers develop attributional inferences about the decision-making or

informational value of a negative review and thus their tendency to discount it. Before establishing those predictions though, we consider temporal proximity cues in online reviews.

Temporal Proximity Cues

Temporal proximity refers to actual or perceived closeness in time between events. This heuristic cue can influence outcomes if perceptions of causality (or the causal ordering of events) are relevant to individual judgments and decisions. Not only do people use temporal cues to establish or infer causality relations among events, but the absence of such cues also can impair consumers' perceptions of causality (Buehner and May 2003; Chen and Lurie 2013; Einhorn and Hogarth 1986), with notable effects on impression formation and decisions.

In online reviews, temporal proximity might be signaled in several ways. For example, reviewers can use temporal language, such as saying "a week ago" or "yesterday." Although seemingly innocuous, such words or phrases evoke mental images of the objective temporal distance between the actual experience and the act of writing the review. Other temporal proximity cues result from time stamping, a common practice on review platforms, which indicates when a review was posted and when the referent experience occurred. On TripAdvisor for example, each hotel review includes an indication of the month and year of the reviewed stay (provided by the reviewer) and the exact date the review was posted. Thus, a review posted on March 14, 2024, also might indicate it refers to a stay during March 2024 (Web Appendix A contains visual examples of different temporal proximity information from various online review platforms). Thus, temporal information is readily accessible to readers, enabling them to identify the temporal proximity of the review relative to the experience. We propose that these cues in turn are relevant for consumer decision-making.

When consumers consider whether and how to use online review information in their decision-making, they might attempt to infer whether the reviews reflect the nature of the actual experience or something idiosyncratic to the reviewer (Epley et al. 2004). Referring to positive reviews, Chen and Lurie (2013) find that readers use temporal contiguity cues (i.e., general timing cues versus no timing information) to make attributions about the reviewers' motivations and actions. The presence (cf. absence) of general temporal cues increases the value of positive (cf. negative) reviews, because the cues causally connect the product experience to the review, thereby facilitating perceptions that the review is driven by the product experience rather than the reviewer. However, Chen and Lurie do not consider temporal *proximity*.

Building on their contributions and utilizing parallel reasoning, we propose that cues of *near* temporal proximity influence how readers make attributions regarding *negative* reviews. Our predictions about the influence of temporal proximity cues diverge from potential contiguity effects; we do not anticipate a review discounting effect for positive reviews that would stem from venting and causal attribution perceptions. Instead, rather than determining if reviewers are engaged in venting or offering biased assessments, we examine if readers perceive negative emotion expressed in a review as more or less diagnostic of the actual experience, based on its combination with near temporal proximity information. Thus, we next address how negative emotional expression in negative reviews is also a critical component for our effect to occur.

Emotional Expression

Emotion is a critical and prevalent component of online user-generated content and WOM (Berger 2014; Hennig-Thurau et al. 2004). Sharing emotional experiences is common for both positive and negative emotions (Rimé 2009), and perceptions of such emotional content in online reviews vary according to whether the review is positive or negative. Content that

contains higher degrees of emotionality is more likely to become popular and spread (Berger and Milkman 2012). Reviewers also tend to believe that more emotionality will increase the impact of their reviews, so they use emotional language purposefully (regardless of review type) to increase their persuasiveness (Rocklage, Rucker, and Nordgren 2018).

Among online reviews and WOM, positive content tends to be shared more frequently, especially in specific domains such as restaurant reviews (three times more common; East, Hammond, and Wright 2007). Such trends likely arise because consumers aim to present themselves positively and share favorable experiences to enhance their social image (Berger 2014; Sundaram, Mitra, and Webster 1998). In addition, positive emotionality is more commonly expected, especially for reviews of hedonic (vs. utilitarian) goods, and regarded as a more positive attribute (Rocklage and Fazio 2020). In their study of positive reviews, Rocklage and Fazio (2020) caution though that when consumers do not regard emotionality as relevant to their decision-making (e.g., utilitarian products), it can diminish readers' perceptions of the review's helpfulness.

In line with this conceptual reasoning, we anticipate that emotionality in negative reviews does not always signal more persuasive or useful information. An emotional response might not be ideal for expressing whether a product or service was satisfactory, for example. Accordingly, prior research offers some mixed findings related to emotionality in negative reviews. Yin, Bond, and Zhang (2021) indicate that negative reviews that convey strong emotional arousal (e.g., anxiety) increase perceived helpfulness, but other negative emotions (e.g., anger) have no influence on helpfulness. Alternatively, negative emotionality might increase persuasion while simultaneously lowering assessments of review helpfulness (Kim and Gupta 2012). In an attempt to reconcile such mixed findings, we consider the potential influence of temporal proximity cues

in online reviews that include expressions of negative emotionality. Specifically, negative reviews that contain cues of nearer temporal proximity and some degree of negative emotionality may be more likely to be perceived as examples of venting. This combination, rather than either element on its own, may be necessary to elicit inferences of venting.

There is a positive analog to this reasoning too, of course: Positive emotional expressions in reviews can be combined with specific temporal proximity cues to influence perceptions of positive review content. However, these cues and their interactive effects on readers' processing and their decision-making should be unrelated to venting. A positive counterpart to venting, "gushing," is interesting and worthy of further exploration, but it falls outside the defined scope of our research. Instead, we next focus on venting and how it is perceived by observers of the venting, in the context of negative online reviews.

Venting

Venting is broadly defined as expressions of *negative* feelings (Bushman 2002; Dalebroux, Goldstein, and Winner 2008; Parlamis 2012). Although generally described as active and uncontrollable (rather than passive and thought-out), it can range from mild disclosures to severe expressions of outrage to inappropriate behavior (Wetzer, Zeelenberg, and Pieters 2007). Its uncontrollability and active feeling imply a timeliness, or freshness, of the negative emotions being expressed. Venting also is personally motivated, undertaken to achieve emotional relief (Kowalski 1996) or obtain some social benefit for the person. For example, in conversations, venting can induce sympathy and understanding from others (Alicke et al. 1992).

Prior considerations of this common behavior tend to cite its usefulness as a way to blow off steam or gain catharsis, such that the person feels better afterward (Bennett 1991; Gentile 2013), or else as a means to excite, prolong, and possibly exacerbate negative emotions

(Bushman 2002). Thus, venting might increase product valuations and satisfaction (Nyer 2000), lessen frustration, reduce anxiety associated with dissatisfying consumption experiences (Sundaram, Mita, and Webster 1998), and decrease the need for revenge on firms (Gollwitzer and Denzler 2009). But it also might encourage more customer revenge (Kähr et al. 2016), retaliation (Bushman 2002; Bushman, Baumeister, and Stack 1999), and less favorable brand appraisals (Kopelman, Rosette, and Thompson 2006). Even as they offer diverse findings, these studies consistently prioritize how venting affects the person doing it (i.e., the venter) rather than recipients of the venting (i.e., the audience). Although venting is innately social in nature, most prior research focuses on the venter's own emotions, motivations, attitudes, and behaviors.

To expand this research stream, we focus purposefully on *perceptions of venting*, defined as the inferences, attributions, and assumptions about the venter's motives that audiences derive when reading a review. That is, we study perceptions of venting that result from particular signals (i.e., temporal proximity cues in a negative review that contains some non-negative amount of emotion). Unlike general expressions of negative emotions, venting entails perceptions that the negative emotions evoked by the experience continue to be actively felt (Bushman 2002). Even if the negative experience has stopped, the negative feelings it triggered remain salient (Kross and Ayduk 2008). This contemporaneous, temporal aspect of venting prompts our prediction that temporal proximity cues trigger readers' perceptions that emotional, negative reviews represent manifestations of venting.[1] Perceptions of venting then should lead the audience to attribute the negative reviews to reviewer-based causes, an attribution that instead may be less likely in response to other emotional expressions or negative information.

Causal Attributions

[1] In line with this reasoning, a pilot study indicates that consumers perceive negative emotional expressions as venting (i.e., less objective, less helpful) when the timing of the review is described as closer in time to the experience. Web Appendix B contains further details.

According to attribution and appraisal theory (Smith and Lazarus 1993; Weiner 2014), people make sense of situations by assessing their controllability, cause (external or internal), and stability. They tend to assign internal causes to other people's actions and behaviors. Some efforts to explain the negativity bias assert that consumers rely on previously held beliefs about the source of available information to make their attributions (Chen and Lurie 2013). For online reviews, such beliefs pertain to the review writers and their motives for engaging in online WOM (Berger 2014). That is, audiences infer why review writers share information about a product or service, and those inferences inform their perceptions of the quality, relevance, and value of the shared information (Friestad and Wright 1994). Information in an online review might reflect a reviewer's general tendencies (e.g., always being positive), or it could be associated with the person's experience (e.g., particularly poor service; Mizerski 1982). Typically, consumers attribute information in negative reviews to the actual service or experience, but positive reviews and their underlying motivations tend to be attributed more to the reviewer (Epley et al. 2004).

Prior research on WOM mainly identifies external motivations for sharing positive information, rather than negative information, perhaps echoing a common intuition that positive information reflects personal, self-beneficial motivations (e.g., traits, image concerns; Berger 2014), whereas negative information does not reflect similarly positive connotations. Arguably, negative information shared as online WOM signals a truly poor experience, because reviewers do not want to be associated with "negatives" (e.g., making poor product choices; Bond and Anderson 1987; Manis, Cornell, and Moore 1974). This belief that reviewers would not want to share negative information unless necessary may explain, at least partially, the greater value placed on negative (vs. positive) WOM in online reviews. Because positive information can be

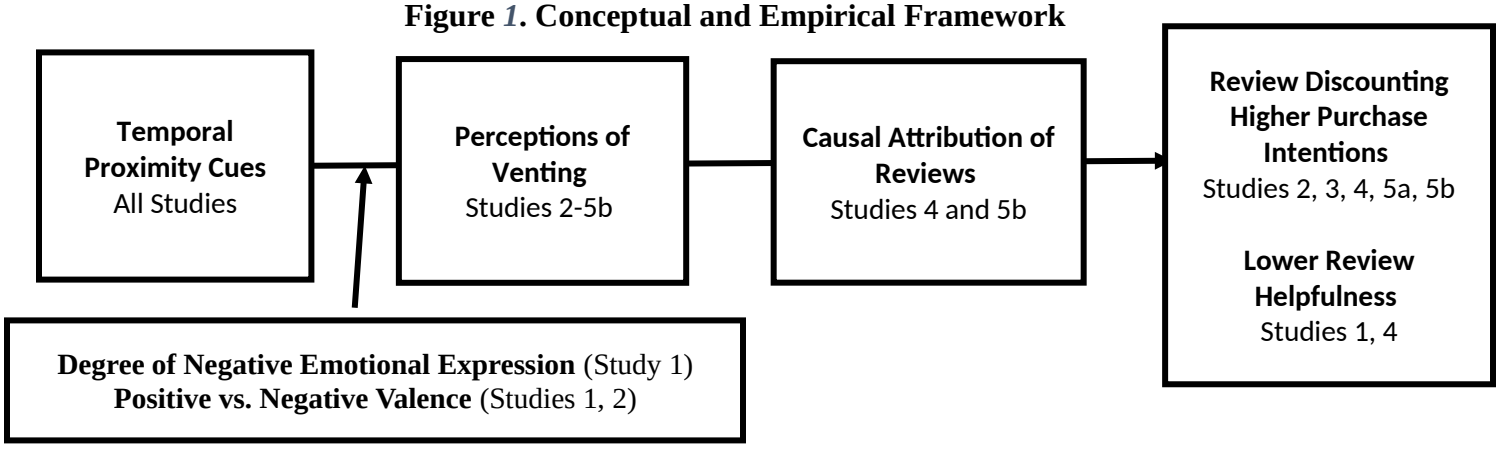
attributed to the reviewer, audiences might find ready reasons to discount this information as less objective or credible (Chen and Lurie 2013; Epley et al. 2004).

In the context of negative reviews, we predict that temporal proximity cues, in combination with negative emotionality, increase perceptions that the reviewer is venting and primes attributions to reviewer-based motivations and benefits. This prediction conflicts with the notion that negative WOM always offers a more objective representation of a product or service experience. The shift in causal attributions, from the experience to the reviewer, then should lead to review discounting, because the reader develops the sense that an external or self-beneficial motivation might be underlying the (negative) information shared in the negative review.

Research Overview

Using archival TripAdvisor data and controlled experiments, we examine how temporal proximity cues combined with negative emotional expression in negative online reviews influence readers' perceptions of venting, subsequent causal attributions, and the extent to which they engage in review discounting (Figure 1).

Figure *1*. Conceptual and Empirical Framework



Across these studies, we confirm the predicted effects for reviews posted on different online platforms (TripAdvisor, Yelp, Amazon), for both products and services, and across hedonic and utilitarian domains. The web appendix lists every item, in the order shown, for all

experiments. We also report on an additional experiment in which we ruled out some plausible alternative explanations for the identified effects, as well as additional preregistered analyses from both experiments and TripAdvisor analyses, in which we establish robustness and consider positive reviews. On OSF we provide PDFs of the Qualtrics surveys along with all experimental data and syntax (see https://osf.io/7kpm8/?view_only=25cc7c48ca45410c8ed1477564768f80).

Table 1: Summary of Key Experimental Results

Study	Sample Size/ Population	Manipulated Moderator	Key Variables Measured	Key Conditions Influencing DV(s)		Main Finding(s)
				Temporally Close M (SD)	Temporally Far M (SD)	
2	420 MTurk with CloudResearch	Review Valence (Negative, Positive)	M: Venting (Definition Provided) DV: Purchase Intentions	Negative: 2.17 (1.01) Positive: 4.17 (.89)	Negative: 1.78 (.69) Positive: 4.12 (.81)	Temporal proximity impacts venting perceptions and purchase intentions for negative (but not positive) reviews
3	330 Prolific Academic		M: Venting (Emotionality) DV: Purchase Intentions	2.39 (1.07)	Far: 1.97 (.68) No Temporal Information: 2.01 (.79)	Temporal proximity impacts venting perceptions and purchase intentions for negative reviews. This only occurs when the review appears temporally close as both the far and no information conditions behave similarly to one another.
WAH	187 MTurk		M: Venting (Index) Alternative Explanations DV: Purchase Intentions	2.36 (.91)	2.09 (.73)	Temporal proximity impacts purchase intentions for negative reviews. This is driven by venting perceptions vs. alternative explanations
4	241 MTurk with CloudResearch		M1: Venting (No Definition Provided) M2: Causal Attributions DVs: Purchase Intentions Review Helpfulness	Purchase: 2.48 (1.09) Helpfulness: 3.10 (1.32)	Purchase: 2.04 (.87) Helpfulness: 3.57 (1.18)	Testing the full hypothesized process model, closer temporal proximity for a negative review increases perceptions of venting, increases the causal attributions of the review to the reviewer (vs. experience), and increases purchase intentions while it decreases review helpfulness (our proxy for review discounting in Study 1).

5a	521 MTurk with CloudResearch	Venting: (Control, Explicit)	M: Venting (Definition Provided) DV: Purchase Intentions	Control: 1.83 (.85) Explicit: 1.93 (.94)	Control: 1.45 (.71) Explicit: 1.78 (.92)	Temporal proximity cues matter when there is no explicit venting cue, however, the effect of temporal proximity cues is mitigated when the reviewer's motive to vent is made explicit.
5b	325 MTurk	Causal Attribution: (Experience, Reviewer)	M: Venting (Definition Provided) DV: Purchase Intentions	Experience: 2.43 (1.10) Reviewer: 2.51 (.77)	Experience: 1.98 (.913) Reviewer: 2.44 (1.01)	For the experience attribution conditions, we replicate prior studies. However, this effect is mitigated in the reviewer attribution conditions.

Study 1: Initial Demonstration of Effects with Hotel Reviews on TripAdvisor

In this initial study, we examine our central prediction from our conceptual framework with archival data gathered from publicly available TripAdvisor reviews, covering all hotels (at the time the data set was created) in 12 major U.S. hotel markets over approximately six years. We use review helpfulness as a proxy for users' favorable perceptions of reviews (Grewal and Stephen 2019; Woolley and Sharif 2021), to provide a relevant means to capture review discounting.

Data Set

The full data set includes 1,672,178 hotel reviews posted on TripAdvisor between January 2010 and September 2015 for all 2,395 hotels in operation during that time in the top 12 U.S. cities by hotel room volume (e.g., New York, Las Vegas, Chicago, Boston). For additional details about these data, see Web Appendix C.

Temporal distance. Our operationalization of near/far temporal proximity cues is well supported by the data, based on the user interface on TripAdvisor's platform at the time the data set was created. Specifically, each review displayed the exact date it was posted (e.g., February 4, 2013) and the user-reported month and year of the reviewed hotel stay (e.g., January 2013).

The difference provides a continuous measure of temporal proximity in months (because the reported timing of the stay only specifies the month and year, it is impossible to calculate an exact measure in days). Thus, we use the number of months (*Distance*) between the stay month and the posting month, where a lower value indicates greater temporal proximity (e.g., *Distance* = 0 means that the review was posted in the same month as the hotel stay; *Distance* = k [k > 0] means it was posted k months after the hotel stay). The mean value (SD) of *Distance* is 1.20 (2.48), with a median of 0 and a range between 0 and 11.

Review helpfulness. We used the helpfulness ratings assigned to each review to measure our dependent variable, equal to the number of times the review (at the time of the data collection) had been voted "helpful" by other TripAdvisor users. This proxy for users' favorable perceptions of the reviews also offers an indicator of perceived credibility (Grewal and Stephen 2019; Woolley and Sharif 2021). In our data, *Helpfulness* exhibits a mean (SD) value of .92 (1.55), a median of 1, and a range between 0 and 229.

Text processing. We used the LIWC dictionary (Pennebaker et al. 2015) to gauge the negative emotionality of the text of each review, according to its "negemo" variable. This variable indicates the percentage of negative emotion words in the review on a scale from 0 to 100 (we retained only reviews written in English that contained at least one word, leading to the exclusion of 20 reviews). We also used LIWC to gauge negative emotional metrics that are both closer to our venting concept (anger and anxiety) and further from it (sadness). The LIWC-provided word count for each review serves as a control variable. In our data, *NegEmo* has a mean (SD) value of .25 (.95), a median of 0, and a range between 0 and 100[2]; *Anger* has a mean (SD) value of .03 (.27), a median of 0, and a range between 0 and 100; *Anxiety* has a mean (SD)

[2] The correlation of negative emotionality (LIWC) and our temporal distance measure for the whole sample is -0.030 ($p < .001$).

value of .03 (.25), a median of 0, and a range between 0 and 100; *Sadness* has a mean (SD) value of .06 (.43), a median of 0, and a range between 0 and 100; *WordCount* has a mean (SD) value of 82.74 (71.08), a median of 63, and a range between 1 and 2,573.

Other variables. From each review, we obtained the hotel name, location, and a dummy variable indicating whether it was written on a mobile device (0 = not mobile, 1 = mobile). This latter characteristic affects review helpfulness (Grewal and Stephen 2019). Thus, we include it as a control variable. Its mean (SD) value is .03 (.17), and its median is 0.

Analysis and Results

To maintain our purposeful focus on negative reviews, we identify a subset of data that includes all hotel reviews where *Rating* = {1, 2, 3}, indicating non-positive reviews.[3] The resulting sample includes 393,587 reviews of 2,367 hotels. Because the review helpfulness dependent variable is a non-negative integer, and reviews are nested in hotels, the models take the form of random-effects Poisson regressions (with a hotel random effect). We test whether *Helpfulness* is affected by *Distance*, *NegEmo*, and their interaction. We also control (with fixed effects) for the month of stay and month of review to capture possible influences of seasonality, the city of the reviewed hotel, and whether or not the review was written on a mobile device (*Mobile*). As the results in Table 2 indicate, for the variables of interest, the main effects and two-way interactions are all significant ($p < .001$).

Table 2. Analysis of Negative Reviews on TripAdvisor (Study 1)

Variables	**DV: Review Helpfulness (Std. Error)**
Distance (≥ 0)	-.022*** (.001)
LIWC Negative Emotion (0-100)	.023*** (.001)
Distance × Negative Emotion	.001*** (<.001)
Month Controls (stay and posting dates)	Yes
City Controls	Yes

[3] In this empirical context, we can define these ratings as negative, because the median hotel rating in the full data set equals 4, and the mean is 4.06. The sample of negative reviews includes 68,815 reviews with a rating of 1 (17.5%), 88,242 reviews with a rating of 2 (22.4%), and 236,530 reviews with a rating of 3 (60.1%).

Mobile Device (0 = non-mobile, 1 = mobile)	.02* (.008)
Review Word Count	.001*** (<.001)
Random Effect Parameter	.381*** (.012)
Constant	-.292*** (.055)
Distribution	Poisson
Number of Reviews	393,587
Number of Hotels	2,367
-2 LL	1,257,240

*** $p < .001$, ** $p < .01$, * $p < .05$

The primary goal of this analysis is to show that when negative emotionality is more prevalent in review text (higher *NegEmo*), those reviews are perceived as less helpful if temporal proximity also is nearer (lower *Distance*). In probing the interaction effects to test this prediction, we use the simple effect of *Distance* on *Helpfulness* to compare the helpfulness of reviews posted with higher versus lower temporal distance at various levels of *NegEmo*. A positive simple effect of *Distance* at any given level of *NegEmo* means that average *Helpfulness* is lower for more temporally proximate reviews (*Distance* = 0) than for more temporally far ones (*Distance* > 0). We expect more positive simple effects for *Distance* when *NegEmo* is higher, which would suggest that more temporally proximate reviews appear less helpful when there is also negative emotion present (i.e., this would be evidence of review discounting).

We estimate simple effects for *Distance* at five levels of *NegEmo* (0, 25, 50, 75, 100). The simple effect is negative when *NegEmo* = 0 (b = -.022, Z = -30.69, $p < .001$), but it becomes positive at *NegEmo* = 25 (b = .015, Z = 1.79, $p = .073$) and then increases at *NegEmo* values of 50 (b = .052, Z = 3.11, $p = .002$), 75 (b = .089, Z = 3.54, $p < .001$), and 100 (b = .126, Z = 3.76, $p < .001$). These results are consistent with our prediction and provide initial evidence in support of our conceptual framework: For negative reviews, the combination of nearer temporal proximity and non-zero negative emotionality results in reviews being perceived as less helpful, which indicates that the information is being discounted.

When we perform similar analyses for anger and anxiety, negative emotional metrics that share some similarities with our venting concept—the main effects and two-way interactions exhibit the same directionality and significance, though the differences in the estimated simple effects are greater. In detail, for different values of *Anger*, the simple effect of *Distance* is negative at 0 (b = -.022, Z = -31.26, $p < .001$) but positive and significant at 25 (b = .093, Z = 2.68, $p < .01$), 50 (b = .209, Z = 2.99, $p < .01$), 75 (b = .325, Z = 3.10, $p < .01$), and 100 (b = .441, Z = 3.15, $p < .01$). For *Anxiety*, the simple effect of *Distance* is negative at values of 0 (b = -.023, Z = -31.88, $p < .001$) and then positive and significant at 25 (b = .340, Z = 9.64, $p < .001$), 50 (b = .702, Z = 9.96, $p < .001$), 75 (b = 1.064, Z = 10.06, $p < .001$), and 100 (b = 1.426, Z = 10.11, $p < .001$). In contrast, while the main effects exhibit the same directionality and significance, the interaction of *Distance* with *Sadness* is not significant ($p = .073$), nor are the simple effects of *Distance* significant at any non-zero level of *Sadness (*at sadness = 0*;* b = -.022, Z = -31.15, $p < .001$; at sadness > 0, all $p > .146$).

Additional Analyses

Robustness checks. To affirm the robustness of these results, we also considered some alternative operationalizations for temporal proximity and negative emotionality and included additional controls for review content (see Table 3).

First, instead of using the number of months (*Distance*) between the stay month and the posting month, where a lower value indicates greater temporal proximity as our operationalization of temporal proximity, we utilized verbal expressions of near temporal proximity in the reviews for an alternative operationalization, where a higher value (percentage of “near” words) indicates higher salience of closer temporal proximity. We found that there were 55,648 reviews that contain any verbal expressions of near or far time (e.g., “today, “last

week"; see Web Appendix C for our dictionaries and descriptive information). Focusing specifically on the this subset of reviews we performed a similar analysis as before and found significant main effects of both the verbal near temporal distance proxy (b = .026, Z = 13.12, p < .001), *NegEmo* (b = .066, Z = 16.22, p < .001), and the interaction (b = -.003, Z = -3.09, p = .002; see Model 1, Table 3).

We also estimated simple effects for near temporal proximity language at five levels of *NegEmo* (0, 25, 50, 75, 100). The simple effect is positive when *NegEmo* = 0 (b = .026, Z = 13.12, p < .001), but it becomes negative at *NegEmo* = 25 (b = -.045, Z = -1.99, p =.046) and then increases at *NegEmo* values of 50 (b = -.117, Z = -2.55, p = .011), 75 (b = -.88, Z = -2.73, p = .006), and 100 (b = -.260, Z = -2.82, p = .005). These results are consistent with our prediction and provide additional evidence in support of our conceptual framework: For negative reviews, the combination of a higher percentage of near temporal proximity words and non-zero negative emotionality results in reviews being perceived as less helpful.

For our next round of robustness checks, we again use the number of months (*Distance*) between the stay month and the posting month for our temporal proximity proxy. However, instead of using the LWIC's negemo score for our measure of negative emotional expression (Pennebaker et al. 2015), we operationalize review negativity by calculating a VADER-based negative score (Hutto and Gilbert 2014; M = .06, SD = .07, min = 0, max = 1; Model 2, Table 3) and derive a maximum negative emotionality score using the Evaluative Lexicon (Rocklage, Rucker, and Nordgren 2018; M = 4.87, SD = 1.62, min = 1, max = 8.08; Model 3, Table 3). We run these analyses using our primary operationalization of temporal proximity (*Distance*) to ensure a large enough sample for analysis. The results in Table 3 show that our findings are robust to different specifications of temporal proximity and negative emotional expression.

Table 3: Robustness Checks (Study 1)

Variables	Model 1	Model 2	Model 3
Distance (Verbal)	.026***(.002)		
Distance (Months ≥ 0)		-.022*** (.001)	-.018*** (.003)
Negative Emotion	.066***(.004)	1.26*** (.022)	.071*** (.001)
Distance × Negative Emotion	-.003**(.001)	.042*** (.01)	.002* (.001)
Month controls (stay and posting dates)	Yes	Yes	Yes
City controls	Yes	Yes	Yes
Mobile device (0 = non-mobile, 1 = mobile)	.083***(.019)	.017* (.008)	.072*** (.01)
Review word count	.001***(<.001)	.001*** (<.001)	.001*** (<.001)
Far words	.023***(.001)		
Random effect parameter	.353***(.01)	.379*** (.012)	.372*** (.012)
Constant	-.342***(.063)	-.365*** (.054)	-.600*** (.055)
Distribution	Poisson	Poisson	Poisson
Number of reviews	55,648	393,587	202,838
Number of hotels	2,193	2,367	2,328
-2 LL	200,802	1,254,759	664,230

*** $p < .001$, ** $p < .01$, * $p < .05$

Note: The dependent variable is review helpfulness count (std. error) for all models. The number of reviews for these three columns differ as the verbal expression analysis was only conducted on reviews that had a non-zero score for temporal language, VADER encompasses all negative reviews that we included, and Evaluative Lexicon only includes reviews in its analysis if there are negative emotional words from their dictionary (i.e., non-missing values).

Additionally, based on text analysis, we extract hotel amenities and topics mentioned in the reviews, which arguably could be sources of unobserved heterogeneity that should be controlled for in our analyses. To extract these control variables, we used latent Dirichlet analysis (LDA) and identified 12 topics mentioned in the reviews that earn the highest coherence scores, according to Mallet's Gibbs sampling method with 1,000 iterations. In addition, we included key amenities associated with hotel experiences. For each review and each amenity, we assigned a binary indicator (1/0), according to whether the review contained any words that might be associated with that amenity. The proportion of each topic in each review, together with

binary indicators for each mentioned amenity, provides the set of additional control variables for this follow-up analysis. The results, as reported in Web Appendix C, are consistent with the results for our main model. The precise focus of a review (i.e., amenities and topics mentioned) does not alter the effect of temporal proximity on review helpfulness.

Positive reviews. While we purposefully are focused on negative reviews and negative emotional expression, we additionally examined the effects of *Distance*, *NegEmo*, and their interaction on *Helpfulness* outcomes in positive reviews (*Rating* > 3). We had no apriori predictions for these results. However, the results generally oppose those obtained for negative reviews (*Rating* ≤ 3). Specifically, the simple effect of *Distance* is negative when *NegEmo* = 0 (b = -.007, Z = -17.32, $p < .001$) and even more negative when the values of *NegEmo* are above 0; 25 (b = -.047, Z = -3.16, $p = .002$), 50 (b = -.087, Z = -2.92, $p = .004$), 75 (b = -.127, Z = -2.84, $p = .005$), and 100 (b = -.167, Z = -2.80, $p = .005$).

That is, more negative emotional expressions, shared in closer proximity to an experience described in positive reviews, increases helpfulness ratings. This may be due in part, as readers of reviews that contain negative emotion in positive reviews find these to be more accurate in part as they deviate from the default expectation (i.e., positive emotion in positive reviews). This theorization is in line with Kupor and Tormala (2018) that shows that deviation in online reviews can be a positive thing. Our results provide another way to possibly increase the helpfulness of positive reviews without lowering the actual star rating provided to the reviewed product or service. We discuss this finding, and similar analyses of temporal proximity, positive emotional expression, and positive online reviews, further in Study 2, Web Appendix C, and the General Discussion, noting their implications for continued research into temporal proximity cues and their interactions with positive reviews.

Discussion

Study 1 provides initial, real-world evidence of the combined influences of temporal proximity cues, review valence, and review emotionality on review discounting. We link temporal proximity cues to the perceived helpfulness of a review and determine that negative reviews written temporally near the reviewed hotel stays are perceived as less helpful on average and specifically for reviews that express some degree of negative emotion. Ultimately, this study provides real-world support for our core prediction: When negative online reviews exhibit near temporal proximity cues through the dates when reviewers visited hotels and when they wrote the review and have a non-zero degree of negative emotional expression, they are more likely to be discounted than other types of (negative) reviews.

A limitation to these archival field data is the inability to measure review readers' perceptions of venting. To address this, we next conduct and report on controlled experiments, in which we use different experimental paradigms for temporal proximity cues and explicitly measure venting perceptions. The review content across experiments is held constant and contains a small but non-zero degree of emotionality (~5%). This aligns with the Study 1 finding that some degree of negative emotion must appear in the review for the predicted discounting effect to occur for near (vs. far) negative reviews.

Study 2: The Role of Temporal Proximity Cues for Negative (vs. Positive) Reviews

Across experiments, to gauge such review discounting, we consider whether readers express higher purchase intentions for negative (vs. lower purchase intentions for positive) reviews. That is, we collect consumers' intentions to purchase the reviewed item or experience,

then assess the extent to which those intentions reflect the advice implied in the review to determine how much they have discounted the information. If a negative review implies "do not purchase" but participants signal relatively high purchase intentions, it suggests the review information has been discounted, more so than if purchase intentions were relatively low.

With Study 2, we examine explicitly how venting might induce discounting of negative (vs. positive) reviews. Because venting requires a negative expression of emotion (Bushman 2002; Dalebroux, Goldstein, and Winner 2008; Parlamis 2012), it might be perceived as more likely to occur in negative (vs. positive) reviews. To test this, all participants read either a single positive or negative review. The type of temporal proximity cues differed across conditions within both negative (positive) reviews and in both the negative and positive conditions, a non-zero amount of emotion was expressed.

Method

Study 2 was preregistered (https://aspredicted.org/XYM_RWX). Participants from MTurk, using CloudResearch (N = 503), participated in a 2 (temporal proximity: near, far) $\times$ 2 (review valence: positive, negative) between-subjects design in which they completed a "Restaurant Review Task." They saw a screenshot of a restaurant review on Yelp, which informed them that the review had been written one week after the reviewed visit (far; "Last week I went…") or the same day as the visit (near; "Today I went…"). In line with the preregistration, we excluded 83 participants who failed attention checks, leaving a final sample of 420 participants (M_{age} = 41.15 years, 47.9% men, 52.1% women). The instructions reiterated that the review had been written either one week after the visit (temporally far) or on the same day (temporally near). The five- versus one-star reviews contained different content, but at each

valence, the content only varied in the temporal proximity cue (Figure 2). Both reviews contained some degree of emotion, based on a LIWC analysis (Pennebaker et al. 2015).

After reading their randomly assigned review, participants indicated whether they would consider eating at the restaurant (1 = “not at all,” 5 = “definitely would”). On the next page, we provided a definition of venting (“express a negative emotion … has been discussed as expressing negative emotions in a forceful and often unfair, or in an uncontrollable way”), and participants indicated if the review they read exhibited venting, according to that definition (1 = “strongly disagree,” 7 = “strongly agree”). On another page, we provided measures of perceived emotionality and rationality, which represent reasonable proxies of perceived venting. That is, participants indicated separately if the review had been written with a rational mindset and with an emotional mindset (1 = “strongly disagree,” 7 = “strongly agree”). On a bipolar scale, they also indicated how the review ranked, from “strongly emotional” (1) to “strongly rational” (7).

Figure 2. Study 2 Restaurant Review Stimuli

Negative Near Condition

Negative Far Condition

Positive Near Condition

Positive Far Condition

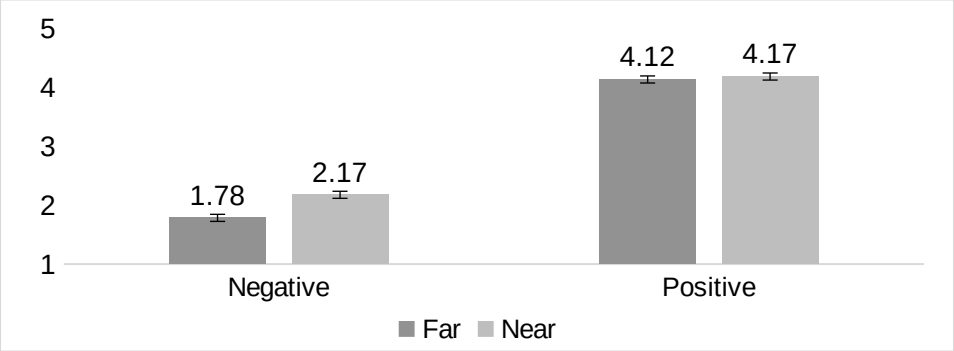
Finally, participants completed attention checks and demographic questions. Web Appendix D lists all experimental items; Web Appendix E reports the correlations and mediation analyses, including three additional emotionality and rationality measures for perceived venting. It also includes the significant simple effects for purchase intentions and perceived venting that are not highlighted in the main results section.

Results

Purchase intentions. We regressed purchase intentions on temporal proximity (far = –1, near = 1), valence (negative = –1, positive = 1), and their interaction. The overall model is significant ($F(3, 416) = 217.84$, $p < .001$), and we find significant main effects of valence ($b = 1.08$, $t(416) = 25.47$, $p < .001$) and temporal proximity ($b = .113$, $t(416) = 2.66$, $p = .008$). Positive reviews prompt higher purchase intentions ($M = 4.15$, $SD = .85$) than negative reviews

(M = 2.00, SD = .90), and temporally near reviews evoke higher purchase intentions (M = 3.13, SD = 1.38) than far reviews (M = 2.95, SD = 1.39). The interaction is significant (b = -.09, t(416) = -1.99, p = .047). As predicted, the simple effect of temporal proximity on purchase intentions is positive and significant for negative reviews (b = .20, t(213) = 3.27, p = .001); negative reviews written near the experience lead to higher purchase intentions (M = 2.17, SD = 1.01) than negative reviews written far from the experience (M = 1.78, SD = .69). This simple effect of temporal proximity is not significant for positive reviews (b = .03, t(203) = .477, p = .634; M_{near} = 4.17, SD_{near} = .89; M_{far} = 4.12, SD_{far} = .81; see Figure 3).

Figure 3. Purchase Intentions by Review Valence and Temporal Proximity



Perceived venting. When we regress perceived venting on temporal proximity, valence, and their interaction, the overall model is significant (F(3, 416) = 346.91, p < .001), revealing main effects of valence (b = -1.91, t(416) = -31.29, p < .001) and temporal proximity (b = .22, t(416) = 3.55, p < .001). Positive reviews exhibit less perceived venting (M = 1.24, SD = .68) than negative reviews (M = 5.11, SD = 1.66), and reviews written near the experience are perceived as exhibiting more venting (M = 3.46, SD = 2.34) than far reviews (M = 2.93, SD = 2.26). Here again, the interaction is significant (b = -.22, t(416) = -3.59, p < .001). The simple effect of temporal proximity on perceived venting is positive and significant for negative reviews (b = .44, t(213) = 3.95, p < .001). Participants believe that the near negative review represents venting (M = 5.49, SD = 1.24), more so than the far negative review (M = 4.62, SD = 1.97). The

simple effect of temporal proximity is not significant for positive reviews though (b = -.003, t(203) = -.060, p = .952; M_{near} = 1.24, SD_{near} = .57; M_{far} = 1.24, SD_{far} = .80).

Moderated mediation. To test whether perceived venting mediates the relationship between the temporal proximity of a review and purchase intentions, we ran a moderated mediation in PROCESS Model 8 (10,000 resamples; Hayes 2017), with review valence as the moderator. We observe significant moderated mediation (b = -.05, SE = .02, CI_{95}[-.10, -.02]), such that the conditional indirect effect of temporal proximity on purchase intentions, through perceived venting, is positive and significant for negative reviews (b = .05, SE = .02, CI_{95}[.02, .10]) but not significant for positive reviews (b = -.003, SE = .01, CI_{95}[-.01, .01]).[4]

Discussion

Study 2 establishes that temporal proximity cues in *negative* reviews affect consumers' purchase intentions, due to their perceptions of venting, which only arise for negative reviews. These findings thus offer some variance, relative to the results of the positive review condition in Study 1. We postulate that this difference might reflect the study designs, involving an experimental manipulation of a single review (Study 2) versus considerations of many, real reviews (Study 1). For example, prior research that centers solely on positive online reviews implies that attributions based on a single observation tend to be discounted, particularly if the outcome reasonably can be attributed to multiple causes (Folkes 1988; Kim and Gupta 2012).

To continue to speculate on differences that emerged, Study 2 participants may have been inclined to attribute positive emotional reviews to reviewer idiosyncrasies but inherently attribute negative reviews to the experience until the heuristic cues of temporal proximity and negative emotionality are seen together (Epley et al. 2004, Mizerski 1982, Wu 2013). This would be in

[4] If we run Model 8 with other proxies for venting (rationality, emotionality, and the bipolar rationality–emotionality index), the indices of moderated mediation are consistently significant (Web Appendix E).

line with prior research that shows that positive reviews stem from multiple reviewer-based factors versus negative reviews, which can result from a single, objectively negative experience. In the General Discussion, we further address some nuances that might influence perceptions of emotionality and review helpfulness, among the various factors that can determine them. In the meantime, we reembrace our primary focus on examining the perceptions of negative reviews that contain some degree of emotional expression.

Study 3: The Role of Temporal Proximity Cues Compared to No Information

In Study 3, we examine how consumers process negative reviews, with consistent degrees of negative emotion, when temporal proximity cues are (vs. are not) provided. In so doing, we test our prediction that information about the time between when a negative review was written and when the reviewed product or service was experienced influences how consumers perceive the review information. Because near temporal proximity cues should cause consumers to perceive a negative review as a manifestation of venting by the reviewer, we predict that such cues lead consumers to discount the information in the review. Venting behaviors tend to be regarded as highly emotional (Wetzer, Zeelenberg, and Pieters 2007), so we use consumers' perceptions of negative emotionality and rationality in the review, despite holding review text and emotion constant, as proxies for suspected venting behavior.

Method

Study 3 was preregistered (https://aspredicted.org/X5G_FH5). Participants from Prolific Academic (N = 452) were randomly assigned to one of three conditions (temporal proximity: far, near, no information). As preregistered, we excluded 122 participants for failing attention checks, resulting in a final sample of 330 participants (M_{age} = 35.85 years, 56.4% men, 42.1%

women, 1.5% other). The "Restaurant Review Task" that participants completed was the same as the negative review conditions in Study 2, except that we added a condition without any timing information ("I went"; Figure 4).

Near Condition **Far Condition** **Control Condition**

Figure 4. Study 3 Restaurant Review Stimuli

After reading the randomly assigned review, participants indicated if they would consider eating at the restaurant (1 = "not at all," 5 = "definitely would"). We then asked if they believed the reviewer engaged in venting, using measures of emotionality and rationality (1 = "strongly disagree," 7 = "strongly agree"). Finally, they completed attention check and demographic questions. Web Appendix F contains all the survey items.

Results

Purchase intentions. We regressed purchase intentions on two dummy variables for temporal proximity: dummynear (far and control = -1, near = 1) and dummyfar (near and control = -1, far = 1). The overall model is significant ($F(2, 327) = 7.82$, $p < .001$). According to the significant main effect of dummynear ($b = .19$, $t(327) = 3.40$, $p = .001$), near reviews prompt higher purchase intentions than the other conditions ($M_{near} = 2.39$, $SD_{near} = 1.07$). Dummyfar does not exhibit a significant effect on purchase intentions ($b = -.02$, $t(327) = -.340$, $p = .734$); the far ($M_{far} = 1.97$, $SD_{far} = .68$) and no information ($M_{no\text{-}info} = 2.01$, $SD_{no\text{-}info} = .79$) conditions are similar. This pattern is consistent with our prediction: When a negative review signals near temporal

proximity, purchase intentions are higher, which implies that participants assign less weight to the negative information (i.e., review discounting).

Perceived venting proxies

If indeed review discounting is associated with venting, we also should find stronger perceptions of emotionality (proxy for venting) in the near temporal proximity condition. Therefore, we estimated the same regression model, with emotionality as the dependent variable. The overall model is significant ($F(2, 327) = 3.21$, $p = .042$). We find a main effect of dummynear ($b = .18$, $t(327) = 1.90$, $p = .059$). Participants regard the temporally near reviews as displaying significantly greater emotionality ($M_{near} = 5.26$, $SD_{near} = 1.32$) compared with the far condition ($M_{far} = 4.77$, $SD_{far} = 1.58$; $p = .017$); it is also greater compared with the no information condition ($M_{no\text{-}info} = 4.91$, $SD_{no\text{-}info} = 1.41$; $p = .059$). No significant effect of dummyfar arises though ($b = -.07$, $t(327) = -.688$, $p = .492$), such that both the near and no information conditions are statistically similar.[5]

Mediation. Using PROCESS Model 4 (10,000 resamples; Hayes 2017) to test for mediation, we include perceived emotionality as a proxy for perceived venting, temporal proximity as the independent variable, and purchase intentions as the dependent variable. In the multicategorical mediation analysis, X1 represents the temporal far condition, and X2 represents the temporal near condition, each compared with the other two conditions. These results reveal that X1 does not predict emotionality ($b = -.13$, $t = -.688$, $p = .492$), but X2 positively predicts it ($b = .35$, $t = 1.90$, $p = .059$). In turn, emotionality positively predicts purchase intentions ($b = .14$, $t = 4.19$, $p < .001$). The CI for the indirect effect of emotionality for X1 spans 0 ($b = -.02$, $SE = .03$, $CI_{90}[-.07, .03]$), whereas the CI for X2 does not ($b = .05$, $SE = .03$, $CI_{90}[.008, .09]$), which

[5] We observe only directional differences for rationality, which are directionally consistent with our predictions. Rationality is lowest in the near condition. The full, preregistered analyses for rationality are in Web Appendix G.

indicates mediation. Discounting the negative review (higher purchase intentions) is more likely when that negative review is accompanied by a near temporal proximity cue (vs. far or no temporal cue), because the near temporal proximity cue increases perceptions of venting.

Discussion

Study 3 supports our main prediction that consumers are more likely to engage in review discounting for temporally near (vs. far or no information) negative reviews. In an additional experiment (see Web Appendix H), we confirm these findings using another measure of venting (difference score between review emotionality and rationality); we also rule out several alternative explanations, such as lay beliefs about review writing, reviewer expertise, and reviewer similarity (Chen and Lurie 2013; Grewal and Stephen 2019).

Study 4: Causal Attributions and Serial Mediation

Study 4 builds on the previous studies in two important ways. First, we have focused thus far solely on perceived venting, as the first mediator in our proposed process. In Study 4, we address full serial mediation, by measuring both perceived venting and causal attributions. As we have noted previously, consumers typically attribute information in negative reviews to the actual service or experience, whereas positive reviews and their underlying motivations tend to be attributed to the reviewer (Epley et al. 2004). Instead, we anticipate that perceived venting signals motives that can be attributed to the reviewer (vs. objective assessments of the experience). When near temporal proximity cues increase perceptions of venting, we thus expect a shift in attributions, away from the experience and toward the reviewer. This shift should lead to review discounting, because negative information attributed to the reviewer should be

perceived as less associated with the product or service experience itself. Second, we use review helpfulness as another dependent variable, to link our Study 1 findings more closely with the experimental findings and show consistency across these review discounting outcomes.

Method

Study 4 was preregistered (https://aspredicted.org/BX4_ZZH). Three hundred participants from MTurk, using CloudResearch, were randomly assigned to one of two conditions (temporal proximity: near, far). The review was negative and contained non-zero emotionality in both conditions. In line with our preregistration, we excluded 59 participants who failed attention checks, leaving a final sample of 241 participants (M_{age} = 40.61 years, 52.3% men, 47.3% women, .4% other). They completed the "Restaurant Review Task" from Study 2. After reading the review, participants indicated whether they would consider eating at the restaurant (1 = "not at all," 5 = "definitely would"). Then we measured perceived review helpfulness (1 = "not at all helpful," 5 = "very helpful"), which is similar to real-world measures on sites such as TripAdvisor or Amazon. For perceived venting, we used a single item that asked participants to indicate if they believed the reviewer had engaged in venting (1 = "strongly disagree," 7 = "strongly agree").

Furthermore, we sought to measure causal attributions, with respect to the reviewer's (perceived) motives for writing the review. We adapted two items from Chen and Lurie (2013). The first item asked the participants to indicate "how large a role personal factors (e.g., the reviewer's personality, traits, character, personal style, attitude, etc.) played in the reviewer's decision to write the review." The second item, designed to measure experience attribution, asked participants to indicate "how large a role the restaurant experience (e.g., food quality, service, etc.) played in the reviewer's decision to write the review." Both items used Likert scales

(1 = “minimal role,” 7 = “maximal role”). We calculated an overall causal score by subtracting the experience attributions from the reviewer attributions, such that a higher overall causal attribution score indicates stronger reviewer (weaker experience) attributions. Finally, we issued attention check and demographic questions. Web Appendix I contains all experimental items.

Results

Purchase intentions and helpfulness. When we regress purchase intentions on temporal proximity (far = –1, near = 1), a significant main effect arises (b = .22, t(239) = 3.41, p = .001). A negative review written near in time to the experience prompts higher purchase intentions (M_{near} = 2.48, SD_{near} = 1.09; M_{far} = 2.04, SD_{far} = .87), consistent with our previous studies. When we repeat this analysis using review helpfulness as the dependent variable, we again find a significant main effect of temporal proximity (b = -.22, t(239) = -2.85, p = .005), such that a negative review written temporally near to the experience is deemed less helpful (M_{near} = 3.10, SD_{near} = 1.32; M_{far} = 3.57, SD_{far} = 1.18). In summary, near temporal proximity cues evoke perceptions that negative reviews are less helpful, which results in higher purchase intentions, because the negative information exerts a weaker effect, likely due to the influence of perceptions of venting.

Perceived venting and causal attributions. We estimate regressions of temporal proximity on two mediators. For perceived venting, the effect of temporal proximity is significant (b = .44, t(239) = 4.82, p < .001). Reviews written temporally near (vs. far) are perceived to exhibit more venting (M_{near} = 5.81, SD_{near} = 1.09; M_{far} = 4.93, SD_{far} = 1.73). For causal attributions, we also find a significant effect of temporal proximity (b = .53, t(239) = 3.38, p = .001). Reviews written temporally near (vs. far) get attributed more to the reviewer than to the reviewed experience (M_{near} = -.57, SD_{near} = 2.54; M_{far} = -1.62, SD_{far} = 2.20).

Serial mediation analysis. In two serial mediation models, using PROCESS Model 6 (10,000 resamples; Hayes 2017), perceived venting is M1 and causal attributions are M2. In the first model, which includes purchase intentions as the dependent variable, temporal proximity predicts perceived venting (b = .44; SE = .09, CI_{95}[.26, .62]), perceived venting predicts causal attributions (b = .51, SE = .11; CI_{95}[.30, .72]), and causal attributions predict purchase intentions (b = .23; SE = .02; CI_{95}[.18, .27]). In support of this predicted process, the overall indirect serial mediation model is statistically significant (b = .05; SE = .02, CI_{95}[.02, .09]). The separate individual mediation models are not significant (venting: CI_{95}[-.01, .06]; causal attributions: CI_{95}[-.001, .14]). Furthermore, the serial mediation analysis is not significant if we reverse the order of the mediators (b = .005; SE = .004; CI_{95}[-.002, .01]).

The second model instead includes review helpfulness as the dependent variable. We find similar results, such that temporal proximity predicts venting (b = .44; SE = .09, CI_{95}[.26, .62]), perceived venting predicts causal attributions (b = .51, SE = .11; CI_{95}[.30, .72]), and causal attributions predict helpfulness (b = -.30; SE = .03; CI_{95}[-.35, -.24]). As anticipated, the overall indirect serial mediation model is statistically significant (b = -.07; SE = .02, CI_{95}[-.11, -.03]). Notably, the mediation model with just venting is also significant (CI_{95}[-.11, -.02]), whereas the one with just causal attributions is not (CI_{95}[-.19, .003]). Furthermore, the serial mediation remains significant when we reverse the order of the mediators (b = -.01; SE = .006; CI_{95}[-.03, -.003]). In some instances, explicit information about the reviewer's motivation to write a review (e.g., if the reviewer states they want revenge) seemingly could affect venting perceptions.

Discussion

With Study 4, we test the full proposed conceptual model, using serial mediation and measuring both perceived venting and causal attributions. In addition, by gauging two separate

downstream variables (purchase intention as in our prior experiments and review helpfulness like in Study 1), we affirm that in both cases, near (vs. far) temporal proximity cues lead to review discounting.

Study 5: Process Evidence Using Moderation

In Study 5, we examine the distinct influences of venting perceptions and causal attributions. Specifically, in Study 5a, we introduce explicit venting conditions, such that readers can use this information easily to discern that the negative information shared in the review is motivated by the emotional state of the reviewer (vs. the objective experience). Such insight should decrease the perceived usefulness of the information in the review and prompt relatively higher purchase intentions for the negatively rated product (regardless of temporal proximity).

In Study 5b, we manipulate causal attributions for the review information by providing participants with the reviewer's typical writing tendencies. If a reviewer tends to be negative (vs. positive) in their reviewing behavior, the negative review that participants read seemingly should offer just another example of the kinds of information this reviewer is motivated to share (vs. objective experience). In this case too, we expect consumers to discount the negative information and express relatively higher purchase intentions for a negatively reviewed restaurant (regardless of temporal proximity).

Study 5a: Manipulating Venting Perceptions

To test the role of venting, we adopt a process-by-moderation approach (Spencer, Zanna, and Fong 2005). In explicit venting conditions, temporal proximity cues should matter less than they do when venting is not explicit (as in our previous experiments). Clear information that the

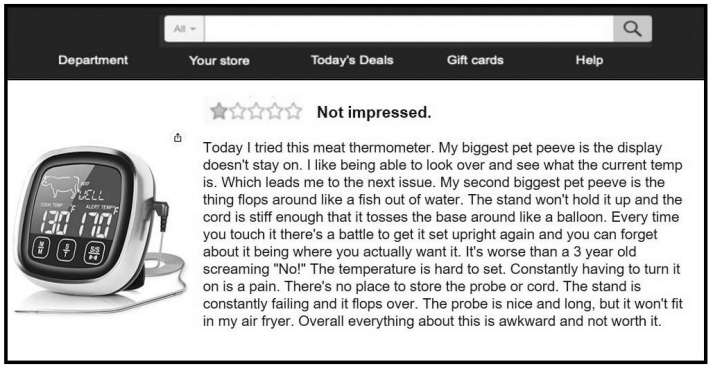
reviewer actively wants to vent should drive its own review discounting effect (Mizerski 1982), which reduces readers' need to rely on temporal proximity cues. Furthermore, we conduct Study 5a in a different consumption context, involving a product and Amazon reviews rather than restaurant or hotel reviews.

Method. Study 5a was preregistered (https://aspredicted.org/Q4F_Z17). Five hundred and ninety seven participants from MTurk, using CloudResearch features were randomly assigned to a 2 (temporal proximity: near, far) × 2 (venting motivation: explicit, not explicit) between-subjects design. In line with our preregistrations, we excluded 76 participants who failed attention checks, leaving a final sample of 521 participants (M_{age} = 43.74 years, 40.8% men, 57.9% women, 1.3% other)[6]. To manipulate venting, we provided information about the reviewer's writing motivations. The explicit venting conditions indicated that the reviewer was motivated to write the negative review to vent; the no explicit venting condition indicated that the motivation was to share information. Participants then read a negative (one-star) review of a meat thermometer from Amazon (Figure 5) and indicated the extent to which they would consider purchasing the product (1 = "not at all," 5 = "definitely would").

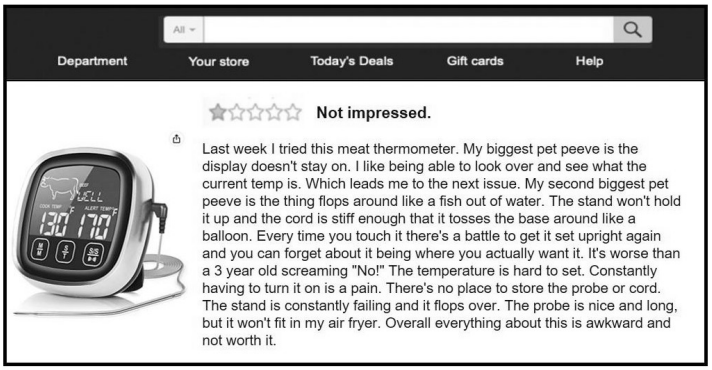
They also completed a manipulation check, confirming that our manipulation of explicit venting was successful, along with attention check items and demographic questions. Web Appendix J contains the items from Qualtrics, the manipulation check analysis, and the significant simple effects that are not highlighted in the main results section.

Figure 5. Product Review Stimuli

[6] One person had missing demographic data.



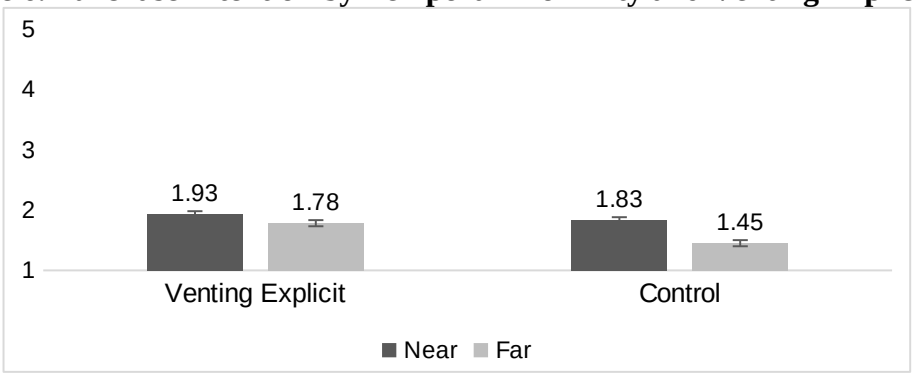
Near Conditions



Far Conditions

Results. To test if the effect of temporal proximity cues on purchase intentions gets mitigated in the presence of explicit information about the reviewer's motivation to vent, we regress purchase intentions on temporal proximity (far = –1, near = 1), venting explicitness (not explicit = –1, explicit = 1), and their interaction. The overall model is significant ($F(3, 517) = 7.58$, $p < .001$). Both main effects are significant (temporal proximity: $b = .13$, $t(517) = 3.47$, $p = .001$; venting: $b = .11$, $t(517) = 2.88$, $p = .004$). Reviews written nearer in time to the experience evoke stronger average purchase intentions ($M_{near} = 1.88$, $SD_{near} = .90$; $M_{far} = 1.62$, $SD_{far} = .84$). When the reviewer's venting motivation is explicit, average purchase intentions also increase ($M = 1.86$, $SD = .93$), compared with when this motivation is not explicit ($M = 1.63$, $SD = .80$). The interaction is not significant but provides directional support ($b = -.06$, $t(517) = -1.49$, $p = .138$).

Figure 6. Purchase Intention by Temporal Proximity and Venting Explicitness



Probing the simple effects, in line with our predictions, temporal proximity cues matter when there is no explicit venting cue (b = .19, t(250) = 3.81, $p < .001$). Specifically, a negative review written temporally near the experience results in stronger purchase intentions (M_{near} = 1.83, SD_{near} = .85; M_{far} = 1.45, SD_{far} = .71). In comparison, the effect of temporal proximity cues appears mitigated when the reviewer's motive to vent is explicit (M_{near} = 1.93, SD_{near} = .94; M_{far} = 1.78, SD_{far} = .92; b = .08, t(267) = 1.32, p = .188; see Figure 6).

Discussion. Using process-by-moderation, we establish how near temporal proximity cues affect both venting perceptions and review discounting. If readers perceive that a review is an example of venting, the influence of temporal proximity cues diminishes, because all negative reviews (regardless of temporal proximity) get discounted as manifestations of the reviewer's motivation to vent. Furthermore, the proposed effect extends from experiential and service domains (e.g., restaurants in Studies 2–4, hotels in Study 1) to products. Temporal proximity cues evoke thoughts of reviewer venting and affect consumers' purchase intentions in response to product reviews too.

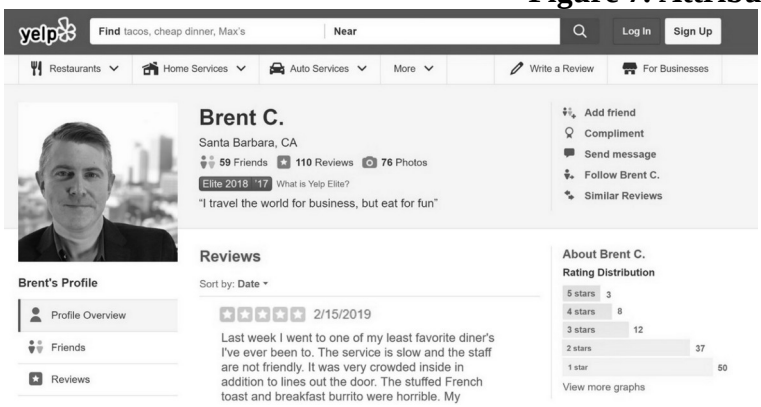
Study 5b: Theory-Based Moderation Test

To examine the role of causal attributions, we provide the Study 5b participants with information about the reviewer's writing tendencies. In the experience attribution condition, the description indicates that the reviewer typically writes four- or five-star reviews, which should imply that a negative review reflects an actual experience, not personal motivations. Although participants still could use temporal proximity cues to deduce the reviewer's motivations, we anticipate that those cues matter less, relative to the reviewer attribution condition. The reviewer attribution condition indicates that the reviewer typically writes one- or two-star reviews, implying a general negativity that could be an explanatory source of the focal negative review.

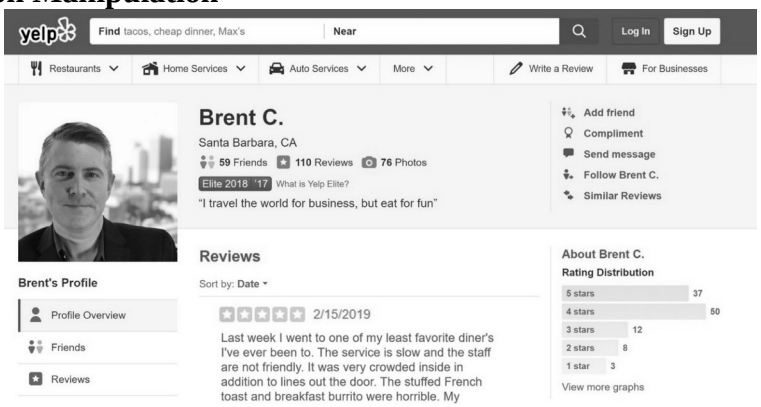
Similar to the logic for Study 5a, when participants have information about a reviewer's motivations or prior behavior, that reviewer-based information should already evoke review discounting (Mizerski 1982), lowering the relevance of temporal proximity cues and mitigating the focal venting-discount effects.

Method. Three hundred and twenty five members of MTurk were randomly assigned to a 2 (temporal proximity: near, far) × 2 (attribution: reviewer, experience) between-subjects design (M_{age} = 38.22 years, 46.8% men, 53.2% women). To manipulate causal attribution, we presented a Yelp reviewer's profile, in which their previous review ratings were mostly negative (reviewer attribution) or mostly positive (experience attribution) (see Figure 7). Next, participants read a review, identified as the reviewer's most recent, which was the negative (one-star) review from the "Restaurant Review Task." They indicated the extent to which they would consider eating at the restaurant (1 = "not at all," 5 = "definitely would"), before completing the manipulation and attention check items and answering demographic questions. Web Appendix K lists all experimental items, summarizes the causal attribution manipulation check, and reports the other significant simple effects that are not highlighted in the main results section.

Figure 7. Attribution Manipulation



Reviewer Attribution

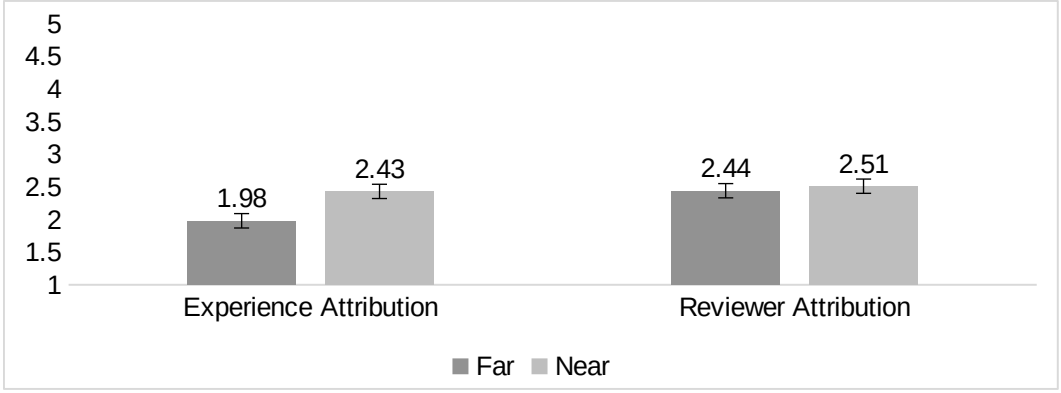


Experience Attribution

Results. To test our prediction that the effect of temporally near negative reviews on purchase intentions is mitigated for reviews that attribute the motive to the experience, rather than to the reviewer, we regress purchase intentions on temporal proximity (far = –1, near = 1), attribution (experience = –1, reviewer = 1), and their interaction. The overall model is significant ($F(3, 321) = 5.34$, $p = .001$), as are both main effects (temporal proximity: $b = .13$, $t(321) = 2.50$, $p = .013$; attribution: $b = .14$, $t(321) = 2.55$, $p = .011$). Reviews written temporally near (vs. far) increase purchase intentions ($M_{near} = 2.47$, $SD_{near} = .96$; $M_{far} = 2.20$, $SD_{far} = .99$). When the attribution centers on the reviewer, average purchase intentions also are higher ($M = 2.47$, $SD = .90$) than if the attribution targets the experience ($M = 2.21$, $SD = 1.03$). The interaction is directionally consistent; $b = -.09$, $t(321) = -1.77$, $p = .078$.

We analyzed the simple effects and found, in line with our prior studies, that temporal proximity cues matter when the attribution of the review is on the experience ($b = .23$, $t(167) = 2.92$, $p = .004$). Specifically, when a negative review is written temporally near the experience, and the attribution is on the experience itself, participants indicate higher purchase intentions ($M_{near} = 2.43$, $SD_{near} = 1.10$; $M_{far} = 1.98$, $SD_{far} = .913$). The effect of temporal proximity cues is mitigated when the review is attributed to the reviewer ($M_{near} = 2.51$, $SD_{near} = .77$; $M_{far} = 2.44$, $SD_{far} = 1.01$; $b = .04$, $t(154) = .534$, $p = .594$; Figure 8).

Figure 8. Purchase Intentions by Review Attribution and Temporal Proximity



Discussion. Study 5b specifies the effects of causal attributions that occur due to temporal proximity on review discounting of negative reviews. Replicating our previous studies, a review posted in near temporal proximity affects purchase intentions through an experience attribution. However, if readers perceive that the review writer has external motivations for writing the review, they rely less on temporal proximity cues, because in this case, the negative reviews get discounted, regardless of perceived venting, due to the causal attributions to the reviewer.

General Discussion

With archival real-world data and controlled experiments, we establish that negative reviews written temporally nearer in time to a reviewed experience that also include a non-zero degree of emotional expression evoke audience perceptions of venting. This perception then causes the readers to attribute the negative information in the review to the reviewer, rather than the reviewed product or service. As a result of this attribution, readers also are more likely to engage in review discounting (i.e., lowered helpfulness ratings and increased purchase intentions). Although negative reviews generally are considered more helpful, diagnostic, and useful than positive reviews (Herr, Kardes, and Kim 1991; Mizerski 1982; Wu 2013), we identify an important combination of cues that can disrupt such perceptions and thereby minimize the influence of negative reviews.

Broadly, this evidence indicates that consumers who read online reviews before making purchase decisions not only gather information but also form complex impressions of the reviewer's state of mind, motivations, and intentions. In our research, participants readily combined complex cues—including when the review was written relative to when the product or

service was experienced, the reviewer's overall rating or impression, and the language-based emotionality of the review content—to form judgments that then influenced the extent to which they granted credence to information contained in an online, consumer-generated review.

Theoretical and Practical Contributions

Our findings help advance understanding of how various cues (e.g., temporal proximity, negative emotional expressions) combine to influence readers' evaluations of negative online reviews, joining evidence of the influences of other factors, such as newness, scarcity, extremity, readability, or length (Ghose and Ipeirotis 2011; Ludwig et al. 2013; Mudambi and Schuff 2010; Pan and Zhang 2011). This research also addresses calls for investigations of the role of emotions in determining how consumers engage with online reviews (Pocchiari, Prosperio, and Dover 2024), and negative reviews specifically (Rocklage and Fazio 2020). Most research assumes that negative online reviews exert a strong influence on consumer decision-making and evaluations of reviewed products and services, because they appear relatively more diagnostic (Mizerski 1982). We offer a distinct perspective by adding evidence of specific instances in which negative reviews are likely to be discounted (Allard, Dunn, and White 2020; McGraw, Warren, and Kan 2015).

The novel insights regarding the influence of perceptions of venting on consumer behavior and online WOM build on prior venting research that focuses primarily on its antecedents (Alicke et al. 1992; Kähr et al. 2016; Menon and Dubé 2007) or possible consequences for the venter (Bennett 1991; Bushman 2002; Gentile 2013). To the best of our knowledge, this study is the first to address how perceived venting affects audiences of review readers. Instead of studying venting as a one-to-one or one-to-few phenomenon (Alicke et al. 1992; Bushman 2002), we investigate digital marketplaces, in which sharing negative

experiences with vast numbers of others is prevalent and easy. In this sense, it is critical to understand when and why online review content, with its strong potential to influence widespread audiences and their purchase intentions, actually might be perceived as venting.

For online review platforms that seek to organize reviews in the most useful way for readers, while also providing a good experience for review writers, our findings offer some suggestions for interface designs. In particular, platforms could make use temporal proximity information as a metric to determine which reviews appear first (or last) in response to a product or service search (e.g., sorting not simply by reviews most recently posted but factoring in the time between the review and the experience). In addition, platforms could offer guidance to review contributors about the reduced effectiveness of reviews that prompt perceptions of venting to encourage them to write reviews that will be more helpful. Additionally, more sophisticated platforms might consider using AI to flag higher levels of emotionality to reviewers before their reviews are posted, particularly for reviews that are written temporally close to the reviewed experience. In this sense, our findings potentially can benefit the platforms that host online reviews, the writers of online reviews, and the audiences of online reviews.

Directions for Future Research

As a caveat to some of the practical implications we propose, we reiterate that our experiments all involve single reviews. The reactions and behaviors exhibited by audiences of review readers differ when they read multiple, rather than single, reviews (Kronrod and Bart 2024), and in their regular lives, most consumers read more than one review. Thus, additional research is needed to determine if encouraging reviewers to include temporal proximity cues in their online reviews is appropriate in conditions in which many reviews are negative. In

this scenario, repeated instances of perceived venting might validate the overall set reviews and mitigate the venting-discount effect, by evoking causal attributions to the reviewed product or service (i.e., it is so bad it makes every user feel the need to vent). Alternatively, consumers might discount multiple reviews that exhibit venting even more powerfully, if an avalanche of such reviews suggests the firm is being targeted by unfair reviews, retaliation, or "review bombing." Such indications of unfair reviews likely enhance the degree of review discounting, because perceived unfairness leads to greater firm empathy (Allard, Dunn, and White 2020).

Furthermore, we reiterate that the purposeful focus of our research is on negative, rather than positive, reviews. The type and magnitude of emotions expressed have been shown to differentially affect helpfulness (Yin, Bond, and Zhang 2021), which prompted our consideration of the role of emotionality, in combination with temporal proximity cues, across our studies and for both positive and negative reviews. In Study 1, we find that the discounting effect of near temporal proximity cues on review helpfulness is restricted to negative reviews only if we investigate the effects of negative emotionality; it is not present for positive reviews (Web Appendix C). However, when we examine temporal proximity and positive emotional expressions in positive review domains, we find some evidence of review discounting. Specifically, for positive emotions in positive reviews, at the most emotionally positive level, an extra month in temporal distance results in a 28% *increase* in helpfulness on average. Yet we do not uncover the same review discounting effect when we measure purchase intentions.

The variations between the archival data in Study 1 and the experimental results in Study 2 could arise because consumers anticipate that positive (vs. negative) reviews are based on multiple determinants. Especially in single review settings, as we noted previously, readers might develop different attributions and emotions in response to positive versus negative reviews (e.g., attributions based on a single observation may be discounted more for positive reviews; Folkes 1988; Kim and Gupta 2012). These results require further research to explain fully, but as noted previously, perhaps there is a positive counterpoint to the proposed venting effect, in the form of gushing (see Web Appendix C for this analysis). Review helpfulness assessments might be swayed by perceptions of gushing, but perhaps purchase intentions are not as easily shifted. Different cues and factors may be more important to decisions to buy or not (cf. rating something as helpful or not). We hope continued research will examine how temporal cues and emotions influence the perceived usefulness of positive reviews and their impact on different firm-relevant outcome variables.

In certain instances in the negative review domain, temporal proximity cues also might not evoke the venting discount; that is, some negative reviews could be less susceptible to this effect. As we show in our Study 1 data, when no negative emotionality is detected in a review, closer temporal proximity cues (via objective time differences or through the language utilized in the review itself) is actually beneficial (vs. detrimental) on helpfulness. We call for research that specifically defines how different types of temporal cues are perceived, and if the effects of these cues vary. For

example, when a review mentions repeated visits or repeated uses of a product, implying extended use and a repeated willingness to try the offering, this could alter the influence of temporal proximity between a specific usage instance and the review. The TripAdvisor data do not reveal any nonlinearity effects associated with the timeframes (i.e., reviews written within one calendar year of the stay), but in some cases, negative reviews might be deemed “too far” from the product or service experience to be useful. In such cases, assumptions about the review writer’s motivation, other than venting, still might bias readers’ perception of the information contained in the review.

Finally, research might test the implications of temporal proximity cues, negative emotionality, and perceived venting beyond the online review context. Consumers are likely to leverage temporal proximity cues on platforms that are more socially connected (e.g., Instagram, TikTok). Prior research identifies various individual consequences of social media use (Barasch, Zauberman, and Diehl 2018; Grewal, Stephen, and Coleman 2019) and how complaints in social media affect readers and firms (Golmohammadi et al. 2021; Herhausen et al. 2019), but we lack a comprehensive understanding of how perceived venting affects consumer behavior and firm-related consequences across such diverse platforms. For example, does content that looks like venting affect viewers differently on non-review platforms that evoke distinct norms and expectations? Facebook is designed to be more social, and venting is generally a social process. In this sense, venting on Facebook might evoke stronger content–platform congruency perceptions, which might lead to different downstream consequences (e.g., sympathy for the

venter, anger at the provider). Thus, we encourage additional research to consider and clarify these different scenarios.

References

Alicke, Mark D., James C. Braun, Jeffrey E. Glor, Mary L. Klotz, Jon Magee, Heather Sederhoim, and Robin Siegel (1992), "Complaining Behavior in Social Interaction," *Personality and Social Psychology Bulletin*, 18 (3), 286-295.

Allard, Thomas, Lea H. Dunn, and Katherine White (2020), "Negative Reviews, Positive Impact: Consumer Empathetic Responding to Unfair Word of Mouth," *Journal of Marketing*, 84 (4), 86-108.

Babić Rosario, Ana, Kristine De Valck, and Francesca Sotgiu (2020), "Conceptualizing the Electronic Word-of-mouth Process: What We Know and Need to Know about eWOM Creation, Exposure, and Evaluation," *Journal of the Academy of Marketing Science*, 48, 422-448.

Barasch, Alixandra, Gal Zauberman, and Kristin Diehl (2018), "How the Intention to Share Can Undermine Enjoyment: Photo-Taking Goals and Evaluation of Experiences," *Journal of Consumer Research*, 44 (6), 1220–37.

Baumeister, Roy F., Ellen Bratslavsky, Catrin Finkenauer, and Kathleen D. Vohs (2001), "Bad Is Stronger Than Good," *Review of General Psychology*, 5 (4), 323-70.

Baumeister, Roy F., Kathleen D. Vohs, Nathan C. DeWall, and Liqing Zhang (2007), "How Emotion Shapes Behavior: Feedback, Anticipation, and Reflection, Rather Than Direct Causation," *Personality and Social Psychology Review*, 11 (2), 167–203.

Bennett, J. C. (1991), "The Irrationality of the Catharsis Theory of Aggression as Justification for Educators' Support of Interscholastic Football," *Perceptual and Motor Skills*, 72 (2), 415-418.

Berger, Jonah (2014), "Word of Mouth and Interpersonal Communication: A Review and Directions for Future Research," *Journal of Consumer Psychology*, 24 (4), 586-607.

Berger, Jonah, and Katherine L. Milkman (2012), "What Makes Online Content Viral?," *Journal of Marketing Research*, 49 (2), 192-205.

Bond, Jr., Charles F., and Evan L. Anderson (1987), "The Reluctance to Transmit Bad News: Private Discomfort or Public Display?," *Journal of Experimental Social Psychology*, 23 (2), 176-187.

Buehner, Marc J., and Jon May (2003), "Rethinking Temporal Contiguity and the Judgement of Causality: Effects of Prior Knowledge, Experience, and Reinforcement Procedure," *Quarterly Journal of Experimental Psychology Section A*, 56 (5), 865-890.

Bushman, Brad J. (2002), "Does Venting Anger Feed or Extinguish the Flame? Catharsis, Rumination, Distraction, Anger, and Aggressive Responding," *Personality and Social Psychology Bulletin*, 28 (6), 724-731.

Bushman, Brad J., Roy F. Baumeister, and Angela D. Stack (1999), "Catharsis, Aggression, and Persuasive Influence: Self-fulfilling or Self-defeating Prophecies?" *Journal of Personality and Social Psychology*, 76 (3), 367 – 376.

Cao, Qing, Wenjing Duan, and Qiwei Gan (2011), "Exploring Determinants of Voting for the "Helpfulness" of Online User Reviews: A Text Mining Approach," *Decision Support Systems*, 50 (2), 511-521.

Chen, Zoey, and Nicholas H. Lurie (2013), "Temporal Contiguity and Negativity Bias in the Impact of Online Word of Mouth," *Journal of Marketing Research*, 50 (4), 463-476.

Chevalier, Judith A., and Dina Mayzlin (2006), "The Effect of Word of Mouth on Sales: Online Book Reviews," *Journal of Marketing Research*, 43 (3), 345-354.

Dalebroux, Anne, Thalia R. Goldstein, and Ellen Winner (2008), "Short-term Mood Repair through Art-Making: Positive Emotion is More Effective than Venting," *Motivation and Emotion*, 32 (4), 288-295.

East, Robert, Kathy Hammond, and Malcolm Wright (2007), "The Relative Incidence of Positive and Negative Word of Mouth: A Multi-category Study," *International Journal of Research in Marketing*, 24 (2), 175-184.

Einhorn, Hillel J., and Robin M. Hogarth (1986), "Judging Probable Cause," *Psychological Bulletin*, 99 (1), 3 – 19.

Epley, Nicholas, Boaz Keysar, Leaf Van Boven, and Thomas Gilovich (2004), "Perspective Taking as Egocentric Anchoring and Adjustment," *Journal of Personality and Social Psychology*, 87 (3), 327-39.

Friestad, Marian, and Peter Wright (1994), "The Persuasion Knowledge Model: How People Cope with Persuasion Attempts," *Journal of Consumer Research*, 21 (1), 1-31.

Folkes, Valerie S (1988), "Recent Attribution Research in Consumer Behavior: A Review and New Directions," *Journal of Consumer Research*, 14 (4), 548-565.

Gentile, Douglas A (2013), "Catharsis and Media Violence: A Conceptual Analysis," *Societies*, 3 (4), 491-510.

Ghose, Anindya, and Panagiotis G. Ipeirotis (2011), "Estimating the Helpfulness and Economic Impact of Product Reviews: Mining Text and Reviewer Characteristics," *IEEE Transactions on Knowledge and Data Engineering*, 23 (10), 1498-1512.

Gollwitzer, Mario, and Markus Denzler (2009), "What Makes Revenge Sweet: Seeing the Offender Suffer or Delivering a Message?" *Journal of Experimental Social Psychology*, 45 (4), 840-844.

Golmohammadi, Alireza, Taha Havakhor, Dinesh K. Gauri, and Joseph J. Comprix (2021), "Complaint Publicization in Social Media," *Journal of Marketing*, 85 (6), 1-23.

Grewal, Lauren and Andrew T. Stephen (2019), "In Mobile We Trust: The Effects of Mobile Versus Non-Mobile Reviews on Consumer Purchase Intentions," *Journal of Marketing Research*, 56 (5), 791-808.

Grewal, Lauren, Andrew T. Stephen, and Nicole Verrochi Coleman (2019), "When Posting About Products on Social Media Backfires: The Negative Effects of Consumer Identity Signaling on Product Interest," *Journal of Marketing Research*, 56 (2), 197 - 210.

Hayes, Andrew F. (2017), *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-based Approach.* New York: Guilford Press.

Hennig-Thurau, Thorsten, Kevin P. Gwinner, Gianfranco Walsh, and Dwayne D. Gremler (2004), "Electronic Word-of-mouth via Consumer-opinion Platforms: What Motivates Consumers to Articulate Themselves on the Internet?," *Journal of Interactive Marketing*, 18 (1), 38-52.

Herhausen, Dennis, Stephan Ludwig, Dhruv Grewal, Jochen Wulf, and Marcus Schoegel (2019), "Detecting, Preventing, and Mitigating Online Firestorms in Brand Communities," *Journal of Marketing*, 83 (3), 1-21.

Herr, Paul M., Frank R. Kardes, and John Kim (1991), "Effects of Word-of-mouth and Product-attribute Information on Persuasion: An Accessibility-diagnosticity Perspective," *Journal of Consumer Research*, 17 (4), 454-462.

Hutto, Clayton J., and Eric Gilbert (2014), "VADER: A Parsimonious Rule-Based Model for Sentiment Analysis of Social Media Text," in Proceedings of the Eighth International Conference on Weblogs and Social Media. Palo Alto, CA: Association for the Advancement of Artificial Intelligence.

Hydock, Chris, Zoey Chen, and Kurt Carlson (2020), "Why Unhappy Customers Are Unlikely to Share Their Opinions with Brands," *Journal of Marketing*, 84 (6), 95-112.

Kähr, Andrea, Bettina Nyffenegger, Harley Krohmer, and Wayne D. Hoyer (2016), "When Hostile Consumers Wreak Havoc on your Brand: The Phenomenon of Consumer Brand Sabotage," *Journal of Marketing*, 80 (3), 25-41.

Kim, Junyong, and Pranjal Gupta (2012), "Emotional Expressions in Online User Reviews: How They Influence Consumers' Product Evaluations." *Journal of Business Research*, 65 (7), 985-992.

Kopelman, Shirli, Ashleigh Shelby Rosette, and Leigh Thompson (2006), "The Three Faces of Eve: Strategic Displays of Positive, Negative, and Neutral Emotions in Negotiations," *Organizational Behavior and Human Decision Processes*, 99 (1), 81-101.

Kowalski, Robin M. (1996), "Complaints and Complaining: Functions, Antecedents, and Consequences," *Psychological Bulletin*, 119 (2), 179 - 196.

Kronrod, Ann and Bart, Yakov (2024), "The Paradox of Word of Mouth: Do More Certain Transmitters Generate Less Certain Receivers?," Working Paper. Available at SSRN.

Kross, Ethan, and Ozlem Ayduk (2008), "Facilitating Adaptive Emotional Analysis: Distinguishing Distanced-analysis of Depressive Experiences from Immersed-analysis and Distraction," *Personality and Social Psychology Bulletin*, 34 (7), 924-938.

Kupor, Daniella and Zakary Tormala (2018), "When Moderation Fosters Persuasion: The Persuasive Power of Deviatory Reviews," *Journal of Consumer Research*, 45(3), 490–510.

Laczniak, Russell N., Thomas E. DeCarlo, and Sridhar N. Ramaswami (2001), "Consumers' Responses to Negative Word-of-Mouth Communication: An Attribution Theory Perspective," *Journal of Consumer Psychology*, 11(1), 57–73.

Liu, Yong (2006), "Word of Mouth for Movies: Its Dynamics and Impact on Box Office Revenue," *Journal of Marketing*, 70 (3), 74–89.

Ludwig, Stephan, Ko De Ruyter, Mike Friedman, Elisabeth C. Brüggen, Martin Wetzels, and Gerard Pfann (2013), "More Than Words: The Influence of Affective Content and Linguistic Style Matches in Online Reviews on Conversion Rates," *Journal of Marketing*, 77 (1), 87-103.

Manis, Melvin, S. Douglas Cornell, and Jeffrey C. Moore (1974), "Transmission of Attitude Relevant Information through a Communication Chain," *Journal of Personality and Social Psychology*, 30 (1), 81–94.

McGraw, A. Peter, Caleb Warren, and Christina Kan (2015), "Humorous Complaining," *Journal of Consumer Research*, 41 (5), 1153–71.

Menon, Kalyani, and Laurette Dubé (2007), "The Effect of Emotional Provider Support on Angry versus Anxious Consumers," *International Journal of Research in Marketing*, 24 (3), 268-275.

Mizerski, Richard W. (1982), "An Attribution Explanation of the Disproportionate Influence of Unfavorable Information," *Journal of Consumer Research*, 9 (3), 301-310.
Mudambi, Susan M., and David Schuff (2010), "What Makes a Helpful Review? A Study of Customer Reviews on Amazon.com," *MIS Quarterly*, 34 (1), 185-200.
Nyer, Prashanth U. (2000), "An Investigation into Whether Complaining Can Cause Increased Consumer Satisfaction," *Journal of Consumer Marketing*, 17 (1), 9 – 19.
Pan, Yue, and Jason Q. Zhang (2011), "Born Unequal: A Study of the Helpfulness of User-Generated Product Reviews," *Journal of Retailing*, 87 (4), 598-612.
Parlamis, J.D. (2012), "Venting as Emotion Regulation: The Influence of Venting Responses and Respondent Identity on Anger and Emotional Tone," *International Journal of Conflict Management*, 23 (1), 77-96.
Pennebaker, James W., Ryan L. Boyd, Kayla Jordan, and Kate Blackburn (2015), *The Development and Psychometric Properties of LIWC2015*. Austin, TX: University of Texas at Austin.
Pocchiari, M., Proserpio, D., and Dover, Y. (2024), "Online Reviews: A Literature Review and Roadmap for Future Research," *International Journal of Research in Marketing*, Forthcoming.
Rimé, Bernard (2009), "Emotion Elicits the Social Sharing of Emotion: Theory and Empirical Review," *Emotion Review*, 1 (1), 60-85.
Rocklage, Matthew D., and Russell H. Fazio (2020), "The Enhancing versus Backfiring Effects of Positive Emotion in Consumer Reviews," *Journal of Marketing Research*, 57 (2), 332-352.
Rocklage, Matthew D., Derek D. Rucker, and Loran F. Nordgren (2018), "The Evaluative Lexicon 2.0: The Measurement of Emotionality, Extremity, and Valence in Language," *Behavior Research Methods*, 50 (4), 1327– 44.
Sen, Shahana, and Dawn Lerman (2007), "Why Are You Telling Me This? An Examination into Negative Consumer Reviews on the Web," *Journal of Interactive Marketing*, 21 (4), 76-94.
Smith, Craig A., and Richard S. Lazarus (1993), "Appraisal Components, Core Relational Themes, and the Emotions," *Cognition & Emotion*, 7 (3-4), 233-269.
Spencer, Steven J., Mark P. Zanna, and Geoffrey T. Fong (2005), "Establishing a Causal Chain: Why Experiments are Often More Effective than Mediational Analyses in Examining Psychological Processes," *Journal of Personality and Social Psychology*, 89 (6), 845-851.
Sundaram, D.S., Kaushik Mitra, and Cynthia Webster (1998), "Word-of-Mouth Communications: a Motivational Analysis," in *Advances in Consumer Research*, Volume 25, eds. Joseph W. Alba & J. Wesley Hutchinson, Provo, UT: Association for Consumer Research, 527-531.
Varga, Marton, and Paulo Albuquerque (2024), "The Impact of Negative Reviews on Online Search and Purchase Decisions," *Journal of Marketing Research*, 61 (5), 803-820.
Weiner, Bernard (2014), "The Attribution Approach to Emotion and Motivation: History, Hypotheses, Home Runs, Headaches/Heartaches," *Emotion Review*, 6 (4), 353-361.
Wetzer, Inge M., Marcel Zeelenberg, and Rik Pieters (2007), "'Never Eat in that Restaurant, I Did!': Exploring Why People Engage in Negative Word-of-mouth Communication," *Psychology & Marketing*, 24 (8), 661-680.

Willemsen, Lotte M., Peter C. Neijens, Fred Bronner, and Jan A. De Ridder (2011), ""Highly Recommended!" The Content Characteristics and Perceived Usefulness of Online Consumer Reviews," *Journal of Computer-Mediated Communication*, 17 (1), 19-38.

Woolley, Kaitlin, and Marissa A. Sharif (2021), "Incentives Increase Relative Positivity of Review Content and Enjoyment of Review Writing," *Journal of Marketing Research*, 58 (3), 539-558.

Wu, Philip Fei (2013), "In Search of Negativity Bias: An Empirical Study of Perceived Helpfulness of Online Reviews," *Psychology & Marketing*, 30 (11), 971-984.

Yin, Dezhi, Samuel Bond, and Han Zhang (2021), "Anger in Consumer Reviews: Unhelpful but Persuasive?." *MIS Quarterly*, 45 (3), 1059-1086

Zhu, Feng and Xiaoquan Zhang (2010), "Impact of Online Consumer Reviews on Sales: The Moderating Role of Product and Consumer Characteristics," *Journal of Marketing*, 74 (2), 133–48