Focus Within or On Others: The Impact of Reviewers' Attentional Focus on Review Helpfulness

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Abstract: When reviewers write online reviews, they differ in the focus of their attention: some focus on their own experiences, while some direct their attention to others—prospective consumers who may read the reviews in the future. This paper explores how, why, and when reviewers' attentional focus can influence the helpfulness evaluation of reviews beyond the impact of substantive review content. Drawing on the attentional focus and persuasion literatures, we develop a theoretical model proposing that reviewers' attentional focus may influence consumers' perception of review helpfulness through opposing processes, and that its overall effect is contingent on the review's two-sidedness. Results of one archival analysis and five controlled experiments provide consistent support for our hypotheses. This work challenges the predominant view of the positive impact of other-focus (vs. self-focus), explores the *interpersonal* impact of a reviewer's attentional focus on prospective consumers who are total strangers, and reveals an important, context-specific boundary condition.

Keywords: attentional focus, review two-sidedness, perceived review helpfulness, empathic concern, persuasion motives, online reviews, online word-of-mouth

***** *Forthcoming at Information Systems Research* *****

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INTRODUCTION

Online reviews are increasingly indispensable for consumers' purchase decisions. However, the exploding number of reviews can cause information overload and overwhelm consumers (Jones et al. 2004). To address this problem, most online review platforms ask readers to vote on the helpfulness of reviews to identify and prominently display the most helpful ones. We define review helpfulness as the extent to which a review is perceived by consumers to facilitate their decision-making process (Yin et al. 2014). Review helpfulness reflects perceived value or diagnosticity of review information, as a helpful review provides diagnostic value for consumers' judgment and purchase decisions (Mudambi and Schuff 2010).

An in-depth understanding of the factors contributing to review helpfulness has clear benefits to product/service providers, review platforms, and reviewers (Mudambi and Schuff 2010). Prior studies have examined a variety of factors including ratings, product type, reviewer characteristics, and consumers' initial beliefs (e.g., Forman et al. 2008; Huang et al. 2015; Mudambi and Schuff 2010; Yin et al. 2016). The characteristics of review text have also been demonstrated as influential determinants, such as information amount (Kim et al. 2006), readability of the text (Korfiatis et al. 2008; Krishnamoorthy 2015), and emotional expressions (Yin et al. 2014; Yin et al. forthcoming; Yin et al. 2017). A takeaway from this line of research is that beyond *what* reviewers talk about in a review, *how* they talk also matters.

In this paper, we explore the implications of reviewers' focus of attention—focusing on themselves or others—beyond the influence of substantive review content. Reviewers' attentional focus can manifest through subtle changes in their writing styles, such as their use of personal pronouns (e.g., "I," "you") and others-related words (e.g., "users," "someone"). Although these words appear frequently in reviews, they do not convey substantial meanings and are largely "invisible" for readers. On the other hand, these words indicate an individual's focus of attention; for example, "I" reflects one's attention toward oneself, while "you" and "users" reflect one's attention toward others (Ickes et al. 1986; Pennebaker et al. 2003). Because a focus on others (vs. self) plays an important role in offline interactions even between strangers

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(Fraley and Aron 2004; Galinsky and Moskowitz 2000), we speculate that the focus of reviewers' attention may also influence prospective consumers' perception of online reviews. As a motivating example, consider the following three hypothetical reviews of a camera:

Reviewer A: "*It is straightforward to use. All I have to do is point and shoot. The program setting allows me to easily set a program manually. The big scroll wheel is another nice design. I can easily change the mode by scrolling the wheel.*"

Reviewer B/C: "*It is straightforward to use. All you/users have to do is point and shoot. The program setting allows you/someone to easily set a program manually. The big scroll wheel is another nice design. You/A user can easily change the mode by scrolling the wheel.*"

In describing the same experience, Reviewer A focuses on himself/herself whereas Reviewers B and C focus on others (i.e., prospective consumers). Which kind of review is more helpful? How, why, and when does reviewers' focus of attention influence consumers' perception of review helpfulness?

To answer these questions, we draw on the attentional focus and persuasion literatures (Campbell and Kirmani 2000; Hodges et al. 2011) and theorize that a reviewer's other-focused (vs. self-focused) attention can influence perceived review helpfulness via both positive and negative processes: readers may perceive the other-focused reviewer to be more empathic for and concerned about them, but they may also infer the reviewer to have a hidden intent to persuade them. We further propose review two-sidedness as a boundary condition that can "turn off" the negative pathway. We conducted an archival analysis and five controlled experiments to test this theoretical model.

Our research makes three primary contributions. First, while a growing literature has examined how characteristics of review text influence consumer perception of reviews (e.g., Jensen et al. 2013; Yin et al. 2014), this paper is among the first to explore and demonstrate the nontrivial impact of reviewers' attentional focus manifested in the review text. Second, our paper represents an initial attempt to extend the study of attentional focus from offline one-to-one interactions to an online one-to-many context involving *hundreds of thousands of total strangers* during a *persuasion* process. Third, while other-focus is commonly assumed to be more beneficial than self-focus in offline settings (Hodges et al. 2011), we

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find compelling evidence that this assumption does not always hold in the online review context, and we reveal review two-sidedness as an important, context-specific boundary condition.

THEORETICAL DEVELOPMENT AND HYPOTHESES

Attentional Focus

One's focus of attention on oneself or others plays a key role in social interactions, and it has been a popular topic in social psychology for decades. In contrast to focusing on oneself, other-focused attention means turning one's attention to the thoughts and feelings of others (Ingram 1990; Mor and Winquist 2002). By definition, a shift in the focus of attention from oneself to others would involve a change in perspectives, and this concept has also been labeled as "perspective taking" in the literature that we draw on. We consider attentional focus and perspective taking as interchangeable, and we use the former throughout this paper.

Prior literature has revealed that thinking about others can increase an individual's empathy, willingness to help others (Coke et al. 1978; Toi and Batson 1982), and other gestures of altruism (Batson 1991; Batson 1998), and it can also reduce the individual's stereotypic biases and prejudice (Galinsky and Moskowitz 2000). These findings support a predominant view that shifting one's attention to others is beneficial for oneself (Hodges et al. 2011).

On the other hand, the unique nature of online reviews warrants further investigation of attentional focus. First, a primary purpose of online reviews is to inform and persuade future consumers (Sparks et al. 2013). Although turning one's attention to others has been found to facilitate prosocial behaviors (e.g., Batson et al. 1997; Galinsky and Moskowitz 2000), much less is known about its role in persuasion contexts or whether it is always more desirable than self-focus (Hodges et al. 2011). Second, we are interested in the impact of reviewers' attentional focus on consumers who are reading the reviews. The primary interest of prior research (e.g., Batson 1991; Coke et al. 1978) was how a change in the focus of an individual's attention influences the attitude and behaviors of *the individual* rather than the targets of such attention (for a notable exception, see Goldstein et al. 2014). More research is needed to look into the *interpersonal* impact of attentional focus on attentional targets. Third, reviewers are not writing for

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any particular consumer they know, but for hundreds of thousands of future consumers who read the reviews to make purchase decisions. Prior examinations of attentional focus (e.g., Arriaga and Rusbult 1998; Davis 1983) typically involve two individuals who know each other well, but few studies explored cases that involve more than two individuals or strangers (for exceptions, see Fraley and Aron 2004; Galinsky and Moskowitz 2000). In our context, an other-focused reviewer can turn the focus of his/her attention to future consumers and consider their thoughts and feelings when writing a review. However, the reviewer does not know future consumers or how many of them would read his/her review. Thus, there is a need to explore whether the positive effect of other-focus observed in offline interactions would play out in the unique online setting as well. In the following, we first build on the attentional focus literature and propose a positive main effect of other-focus (vs. self-focus) on perceived review helpfulness as our baseline hypothesis.

Perceived Empathic Concern

The prior attentional focus literature suggested that turning one's attention to others generally enhances his/her empathy-related response for the target of other-focus (Coke et al. 1978; Toi and Batson 1982). An important component of empathy relevant to our context is empathic concern (Hodges et al. 2011).[1] Empathic concern refers to one's concerns or compassion for others (Batson 1987).[2] A focus of attention on others has been well established as a reliable means of activating one's empathic concern for others (Batson 2009; Hoffman 2001).

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[1] Although other-focused attention and empathic concern are related, they are distinct constructs. Other-focused attention is a cognitive process in which people are thinking about the thoughts and feelings of others (Mor and Winquist 2002), while empathic concern is related to an emotional response when one affectively experiences another person's feelings (Galinsky et al. 2008). In addition, we acknowledge that the positive effect of other-focus (vs. self-focus) on review helpfulness might also be explained by factors other than perceived empathic concern. For example, reviewers who focus on prospective readers may be perceived to be altruistic, willing to help others, and share their expertise with others. We investigate these alternative explanations in Study 5 and a supplementary study reported in Appendix D.

[2] Sympathy and empathic concern are both emotional responses to others' feelings, but they are distinct psychological processes (Wispé 1986). Sympathy refers to one's heightened awareness of another's distress and suffering, whereas empathic concern captures one's absorption in the feelings of another (Escalas and Stern 2003). It is the latter that is more relevant in our context.

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Because it is intuitive and widely known that a focus on others allows one to better appreciate the situations that the targets on the receiving end encounter, the targets are also likely to make this connection and perceive the other-focused individual as feeling more empathic concern for them (e.g., Batson et al. 1996; Hodges et al. 2010). Goldstein et al.'s (2014) study provided direct evidence for this association between attentional focus and *perceived* empathic concern. In our "one-to-many" online context, consumers reading a review with second-person pronouns such as "you" or others-related words such as "someone" would be a target of the reviewer's other-focused attention. As a result, upon reading such a review, the consumers are likely to perceive the reviewer as being more empathic for them and more concerned about them.

Consumers' perception of greater empathic concern from a reviewer should in turn lead them to perceive the review as more helpful. When people become aware of another person's concern about their well-being, they tend to trust the person because of his/her kindness (Johnson et al. 1996; Mayer et al. 1995) and develop positive feelings toward the person (e.g., Newcomb 1956). Such a favorable impression and the associated positive feelings can spill over to other aspects of the communication process (Pornpitakpan 2004). In our context, consumers who perceive greater empathic concern from a reviewer should trust and like the reviewer to a greater extent. Because reviews from more credible sources are perceived as more helpful (Baek et al. 2012; Cheung et al. 2012), consumers should associate greater empathic concern with more helpful reviews. Thus, we propose the following baseline hypothesis.

Hypothesis 1: A shift in a reviewer's focus of attention from oneself to others increases the helpfulness of the review perceived by prospective consumers.

While the positive effect of a reviewer's other-focus (vs. self-focus) on perceived review helpfulness makes intuitive sense, it is unclear whether it always holds or whether other-focus can trigger consumers' negative reactions under certain conditions. Most studies on attentional focus emphasized the positive effect of other-focus in diverse contexts (Hodges et al. 2011). However, recent studies have started to question this assumption and speculated that other-focus may also backfire under certain circumstances (Sassenrath et al. 2016; Vorauer 2013). In the next section, we build on the persuasion

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knowledge model (Friestad and Wright 1994) and argue that consumers may also react negatively to an other-focused reviewer, especially when the review is one-sided.

Perceived Persuasion Motives and Review Two-Sidedness

Other than perceiving empathic concern, consumers can also interpret a reviewer's other-focused attention in ways that reduce their perception of review helpfulness, such as their inferences about the reviewer's persuasion motives. The generation of online reviews may involve persuasion (Sparks et al. 2013), in which the reviewer (the persuasion agent) writes a review (the "message") to persuade prospective consumers (the "recipient"). We define perceived persuasion motives as the consumers' inference that the reviewer has a hidden intent to persuade them (see Campbell and Kirmani 2000). Based on the persuasion knowledge model, when people are exposed to a persuasion agent's persuasion tactics, it can activate their belief that the agent has persuasion motives (Friestad and Wright 1994; Kirmani and Campbell 2009). Such a belief is especially likely to be triggered if the agent is known to benefit from the tactics (Campbell and Kirmani 2000; Laran et al. 2011). Because other-focus is commonly associated with various positive outcomes for other-focused individuals (Hodges et al. 2011), consumers are likely to infer that the other-focused reviewer intentionally uses this particular tactic to persuade them.

In addition, we propose that the likelihood of this negative inference depends critically on whether the review is two-sided or one-sided. Review two-sidedness refers to the extent to which a review consists of information about both positive and negative attributes of a product (Jensen et al. 2013). Review two-sidedness is unique and important in the online review context, and its main effect on review helpfulness and credibility has been examined in prior research (e.g., Schlosser 2011; Jensen et al. 2013). Two-sided information is typically considered as more objective and truthful about the product (Crowley and Hoyer 1994). Thus, reviewers commenting on both sides are less likely to be perceived as using manipulative tactics to persuade future consumers. In contrast, one-sided reviews are viewed as less credible or trustworthy (e.g., Jensen et al. 2013). For example, "fake" reviewers tend to compose an extreme, one-sided review rather than a two-sided review in order to benefit a company or hurt its competitors (Luca
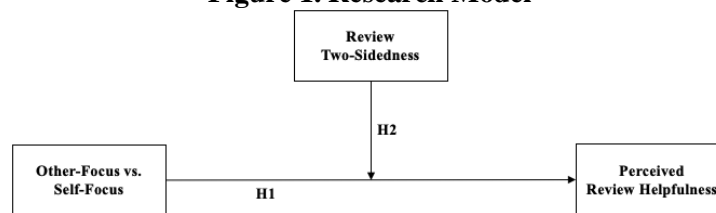
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and Zervas 2016). Hence, negative inferences of reviewers about their attempt to persuade consumers are more likely to occur for one-sided reviews than two-sided reviews.

Consumers' perception of greater persuasion motives from a one-sided reviewer can in turn reduce perceived review helpfulness. Based on reactance theory, inferences of another's persuasion motives result in a feeling of pressure and a potential threat to one's freedom, leading one to be more resistant to persuasion attempts (Brehm and Brehm 2013; Clee and Wicklund 1980). Accumulating evidence from diverse contexts also suggests that the perception of a persuasion agent's use of manipulative tactics undermines message persuasiveness (see Sagarin et al. 2002). In our context, consumers have the freedom to read any reviews they want or form any opinions about a product. Thus, their perception of a reviewer intending to influence their choice can activate their reactance and lower their perception of review helpfulness.

To summarize, the negative process through inferences of reviewers' persuasion motives is stronger for one-sided than for two-sided reviews, but the positive process through perceived empathic concern should remain the same given the close association of other-focus with empathic concern. Thus, we expect the positive effect of other-focus (vs. self-focus) to be attenuated for one-sided reviews and propose the following hypothesis. Our research model is shown in Figure 1.

Hypothesis 2: The positive effect of a reviewer's other-focus (vs. self-focus) on perceived review helpfulness is greater for two-sided reviews than for one-sided reviews, such that a) other-focus has a positive effect on perceived helpfulness of two-sided reviews, and that b) the positive effect of other-focus on perceived helpfulness of one-sided reviews is weaker or non-existent.

Figure 1. Research Model

To test this research model, we used distinct methods and conducted six studies. The first two studies provided a direct test of the hypotheses while the following studies probed into the underlying

mechanisms. Study 1 tested the main effect (H1) by collecting actual reviews from Apple's App Store and measuring attentional focus based on reviewers' use of personal pronouns. Study 2 tested both hypotheses and provided causal evidence by manipulating attentional focus and review two-sidedness in an experiment. Study 3 varied the extent (rather than presence) of review two-sidedness and explored the underlying mechanisms. Studies 4A and 4B focused on one-sided reviews and examined the mechanisms in this situation. Study 5 expanded the operationalization of attentional focus beyond personal pronouns and ruled out a number of alternative mechanisms.

STUDY 1

Data and Variables

Our first study used real-world online reviews of mobile apps from Apple's App Store to test H1. We collected the data in April 2010 by first identifying apps ranked in the top 500 by popularity under each of the 20 categories (games, business, etc.) in the first three months of that year. Among these apps, 40,417 had at least one review. We collected all their historical reviews (N = 1,721,093) and recorded each review's rating, text content, helpful votes, and total votes. We also recorded the following app-level information: the average rating, the count of all ratings, app category, and whether the app was paid. After filtering out reviews that were not written in English, had no content, or had a rating score of zero (presumably due to system errors), 1,623,497 reviews remained. Among this set, 418,415 reviews had received at least one vote.

We measured our dependent variable, review helpfulness, using the ratio of the number of helpful votes divided by the total number of votes (Mudambi and Schuff 2010; Yin et al. 2014). Our independent variable, reviewers' attentional focus, was operationalized based on their use of personal pronouns. Personal pronouns (e.g., "I", "you") are a commonly encountered category of function words that do not convey substantive meanings (unlike content words such as nouns, verbs, and adjectives) (Campbell and Pennebaker 2003). Although these often overlooked, "invisible" function words account for a tiny percentage (less than 0.04%) of the total vocabulary (Chung and Pennebaker 2007), the use of these

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words reflects people's personality and psychological states (Pennebaker 2011). In particular, the use of personal pronouns can indicate one's focus of attention: greater use of first-person pronouns (e.g., "I," "me," "my") reflects the self-focus of an individual (Pennebaker et al. 2003), and greater use of second-person pronouns (e.g., "you," "your") reflects the other-focus (e.g., considering a situation from another's viewpoint) (Ickes et al. 1986; Simmons et al. 2005). To quantify the extent of other-focus (relative to self-focus), we used the text analysis software Linguistic Inquiry and Word Count (LIWC) (Pennebaker et al. 2007) and calculated the ratio of second-person pronouns divided by the sum of first-person and second-person pronouns in each review. We excluded reviews that did not contain either type of personal pronouns and retained the rest for the analyses (N = 301,517 reviews).

We controlled for several variables that can influence review helpfulness, including review rating, length, and reading difficulty (Korfiatis et al. 2008; Mudambi and Schuff 2010). Review length was measured by the number of words in a review. Reading difficulty was measured by the Gunning Fox Index (GFI), an estimate of the number of education years a student needs to understand a given text sample (Gunning 1969). We also controlled for app-level variables, including the average and the total number of the app's ratings, whether or not the app is paid (coded 1 if paid, 0 otherwise), and app category. Summary statistics and correlations for these variables are presented in Table 1.

Table 1. Summary Statistics and Correlations

Variable	N	Mean	Std. Dev.	Min	Max	1	2	3	4	5	6	7	8
1. Review Helpfulness	418415	0.59	0.42	0	1	1							
2. Rating	418415	3.45	1.68	1	5	0.37	1						
3. Length	418415	41.63	48.96	1	1134	0.12	0.03	1					
4. Reading Difficulty	418415	7.05	4.13	0.4	461.6	0.08	0.04	0.31	1				
5. Average Rating	418415	3.61	0.77	1	5	0.10	0.38	0.04	0.05	1			
6. Count of Ratings	418415	499.27	709.19	1	3165	-0.11	-0.03	-0.06	-0.05	0.11	1		
7. Paid	418415	0.57	0.49	0	1	0.06	0.08	0.11	0.05	0.16	-0.08	1	
8. Other-Focus	301517	0.26	0.36	0	1	0.00	-0.03	0.06	0.04	-0.04	-0.01	-0.01	1

Data Analysis and Results

Because the dependent variable, review helpfulness, was a proportion bounded between 0 and 1, OLS regression models may yield biased coefficients (Angrist and Pischke 2008; Kronmal 1993). We adopted the fractional logit model as our main analysis because it can accommodate the bounded nature

of this outcome variable and avoid the truncation problem that would result from dropping cases with 0 or 1 values (see Baum 2008 for further discussions). As shown in Model 1 of Table 2, the coefficient of other-focus (vs. self-focus) was positive and significant ($\beta = 0.036$, $p < 0.01$). To ease the interpretation of results of very large samples (Lin et al. 2013), we calculated the average marginal effect of other-focus: keeping the substantive content identical, as a reviewer switches the use of personal pronouns from first-person only to second-person only, review helpfulness increases by 0.8% ($p < 0.01$). Thus, a subtle change of attentional focus in reviewers' use of "invisible" personal pronouns can result in a small but significant change in review helpfulness perceptions.[3]

Table 2. Empirical Results

Variables	Model 1 Fractional Logit Model (DV: review helpfulness)		Model 2 2nd Stage of Heckman Model (DV: review helpfulness)		Model 3 Negative Binomial Model (DV: number of helpful votes)	
	Coefficient	Robust Std. Error	Coefficient	Robust Std. Error	Coefficient	Robust Std. Error
Number of Total Votes					0.105***	(0.001)
Rating	0.406***	(0.002)	0.089***	(0.000)	0.150***	(0.001)
Length	0.004***	(0.000)	0.001***	(0.000)	0.002***	(0.000)
Reading Difficulty	0.013***	(0.001)	0.003***	(0.000)	0.009***	(0.001)
Average Rating	-0.106***	(0.005)	-0.024***	(0.001)	-0.088***	(0.002)
Count of Ratings	-0.000***	(0.000)	-0.000***	(0.000)	-0.000***	(0.000)
Paid	0.063***	(0.007)	0.031***	(0.002)	0.097***	(0.003)
Other-Focus	0.036***	(0.009)	0.010***	(0.002)	0.027***	(0.004)
Category Dummies	Included		Included			
Constant	-1.042***	(0.037)	0.193***	(0.008)	-0.286***	(0.010)
N	301517		1061680		301517	
Log Likelihood	-163583.96		-680586.08		-512614.33	
Chi Square	46756.43		61532.97		47095.34	

Notes: Robust standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

We conducted a number of additional analyses to test the robustness of our results. First, there might be a sample selection bias, as not all the reviews received helpfulness votes. If the likelihood of a review being voted on is correlated with the explanatory variables predicting review helpfulness (e.g., longer reviews are more likely to be voted), using the sample of only voted reviews (that is likely to be non-random) may result in biased estimates (Kuan et al. 2015). To account for this potential bias, we

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[3] Although the effect size of attentional focus appears small, this is expected because it was caused by a *subtle* change in reviewers' use of personal pronouns ("I" vs. "you"). These personal pronouns do not convey substantive meanings, and they are largely "invisible" and "forgettable". As a result, our demonstration of a significant effect of personal pronouns in the archival study (despite its relatively small effect size) still suggests that reviewers' attentional focus should not be ignored in the determination of review helpfulness evaluations.

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employed Heckman's (1979) two-stage sample selection model as a robustness check. The first stage is a Probit "selection" model that predicts whether a review was voted on or not.[4] In the second stage, we estimated the determinants of a review's helpfulness using only voted reviews, conditional on the first stage. Results of this analysis (see Model 2 of Table 2) were in line with those of our main analysis.

We measured our dependent variable in the above analyses by dividing the number of helpful votes by the total number of votes of a review. Although this measure was commonly adopted to quantify review helpfulness in prior research, the ratio of helpful votes might conceal the actual numbers of helpful votes or total votes (e.g., treating "0 out of 1 review is helpful" as equivalent to "0 out of 10 reviews is helpful" using the ratio measure). To alleviate this concern, we conducted another robustness check with the number of helpful votes as an alternative measure of review helpfulness and the total number of votes as a covariate (Yin et al. 2017). This alternative dependent variable was a count variable with its variance (50.05) greater than its mean (2.36), so we used negative binomial regression in the analysis (Chen and Lurie 2013; Yin et al. 2017). Results in Model 3 of Table 2 also revealed a positive and significant effect of other-focus on review helpfulness ($\beta = 0.027$, $p < 0.01$)[5], consistent with our main analysis. As additional robustness checks, we conducted two more analyses to address potential endogeneity issues related to the unobserved app-level heterogeneity (see Appendix A). The results were consistent with our main analysis.

Discussion

This study showed that the extent to which reviewers focus on others (vs. themselves) was positively associated with review helpfulness, providing real-world evidence for H1. However, the use of archival data necessitated a major limitation: it could not provide direct insights for the causal impact of a

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[4] The first stage included all the variables from the second stage because they might be correlated with the likelihood of a review being voted on (e.g., negative reviews might attract more attention from reviewers; apps with a more positive average rating might get more exposure). We also added another variable that directly influences voting likelihood: the number of days since a review was posted. We did not include this variable in summary statistics and correlations tables because it was used only in the first stage of Heckman's selection model.

[5] Unlike Model 1, we did not include dummy variables for the app category in this model because the model could not converge when category dummies were included.

reviewer's attentional focus on review helpfulness. Although we controlled for a variety of variables shown to influence review helpfulness and conducted robustness checks, unobserved factors that correlate with reviewers' attentional focus and also influence review helpfulness present additional endogeneity concerns. In particular, the influence of reviewers' attentional focus may arise from differences in the substantive content (e.g., opinions) caused by the differential efforts of reviewers who focus on others and those who focus on themselves. In addition, the archival data does not allow us to precisely measure the two-sidedness of review arguments, which is necessary for testing our second hypothesis. We designed an experiment in the next study to address these issues.

STUDY 2

The primary goals of Study 2 were to isolate the causal impact of a reviewer's attentional focus on review helpfulness and to explore the moderating role of review two-sidedness. Participants took part in a hypothetical online decision-making task in which they read and evaluated reviews of four different mobile apps. We manipulated attentional focus within-subjects at two levels (self-focus vs. other-focus) and manipulated review two-sidedness between-subjects at two levels (one-sidedness vs. two-sidedness).

Stimulus Materials

This study used a time management app because time management is a universal concern. This type of apps can improve users' productivity and discourage procrastination through a time management method, in which a timer is used to break down working time into intervals, separated by short breaks.

We developed two sets of treatment reviews for the one-sided condition in two steps. First, we consulted actual reviews from Apple's App Store and created two positive reviews with a focus on reviewers themselves (i.e., using first-person pronouns such as "I," "me," and "mine"). We used only positive reviews to remove the confounding influence of valence. We included four sentences in each review and kept the number of words at a similar level (around 50). In the second step, we constructed two corresponding reviews that are other-focused by replacing first-person pronouns with second-person pronouns. Within each set of reviews, the only difference between the two versions is personal pronouns.

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We then developed two corresponding sets of treatment reviews for the two-sided condition (see Table 3). For each review created in the one-sided condition, we constructed a corresponding two-sided review by changing 2 (out of 4) sentences contained in the review to be negative in valence (e.g., using antonyms and adding negations) while holding the discussed features identical. We also added "Pros" and "Cons" in each review to strengthen the manipulation of review two-sidedness.

Table 3. Review Stimuli in Study 2

	#	Self-Focused Review	Other-Focused Review
One-Sided Condition	1	**Pros:** • This app helps **me** focus on **my** work • It's great that **I** can observe how **I** have been doing to meet goals each week. • It keeps the number of sessions **I** have accomplished and categorizes **my** tasks. • It's easy to organize **my** own time because **I** can customize the timer. **Cons:** None.	**Pros:** • This app helps **you** focus on **your** work. • It's great that **you** can observe how **you** have been doing to meet goals each week. • It keeps the number of sessions **you** have accomplished and categorizes **your** tasks. • It's easy to organize **your** own time because **you** can customize the timer. **Cons:** None.
	2	**Pros:** • The timer helps **me** say "no" to **my** incoming messages. • It allows **me** to get **my** work done but still get a break. • The ticking sound is clear, so **I** can remember when **I** should take a rest. • In addition, it can sync **my** tracked data between **my** phone and computer. **Cons:** None.	**Pros:** • The timer helps **you** say "no" to **your** incoming messages. • It allows **you** to get **your** work done but still get a break. • The ticking sound is clear, so **you** can remember when **you** should take a rest. • In addition, it can sync **your** tracked data between **your** phone and computer. **Cons:** None.
Two-Sided Condition	1	**Pros:** • This app helps **me** focus on **my** work • It's great that **I** can observe how **I** have been doing to meet goals each week. **Cons:** • It *doesn't* keep the number of sessions **I** have accomplished or categorize **my** tasks. • It's *not* easy to organize **my** own time because **I** *cannot* customize the timer.	**Pros:** • This app helps **you** focus on **your** work. • It's great that **you** can observe how **you** have been doing to meet goals each week. **Cons:** • It *doesn't* keep the number of sessions **you** have accomplished or categorize **your** tasks. • It's *not* easy to organize **your** own time because **you** *cannot* customize the timer.
	2	**Pros:** • The timer helps **me** say "no" to **my** incoming messages. • It allows **me** to get **my** work done but still get a break. **Cons:** • The ticking sound is *unclear*, so **I** *cannot* remember when **I** should take a rest. • It *cannot* sync **my** tracked data between **my** phone and computer.	**Pros:** • The timer helps **you** say "no" to **your** incoming messages. • It allows **you** to get **your** work done but still get a break. **Cons:** • The ticking sound is *unclear*, so **you** *cannot* remember when **you** should take a rest. • It *cannot* sync **your** tracked data between **your** phone and computer.

Notes: emphases and italics added for illustration purpose only (i.e., not shown to participants).

Procedure and Measures

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159 respondents from Amazon Mechanical Turk (MTurk) participated in this study and were compensated for their participation.[6] In the cover story, participants were asked to imagine that they were looking for a time management app from Apple's App Store, and their search returned three apps. These three apps had a similar average rating score of 4 (out of 5) stars, and each cost $2. For each app, the participants were told to read a review randomly selected from its former users. A filler review without personal pronouns was presented first, followed by two treatment reviews chosen from different sets in either the one-sided or two-sided condition. The order of treatment—self-focused vs. other-focused—was counterbalanced.

After reading each review, participants were asked to report their perceptions of review helpfulness using a 9-point scale. We utilized a measure with three items from Sen and Lerman (2007) (e.g., "not at all helpful/very helpful"). As a manipulation check, we also asked participants to report their perceptions of the reviewer's other-focus in the review using three items adapted from Grant and Berry (2011) (e.g., "The reviewer described the app from the perspective of other people (e.g. you) reading the review.") and review two-sidedness using three items from Jensen et al. (2013) (e.g., "very one-sided/very two-sided"). Appendix C contains all the measures used in this and follow-up studies.
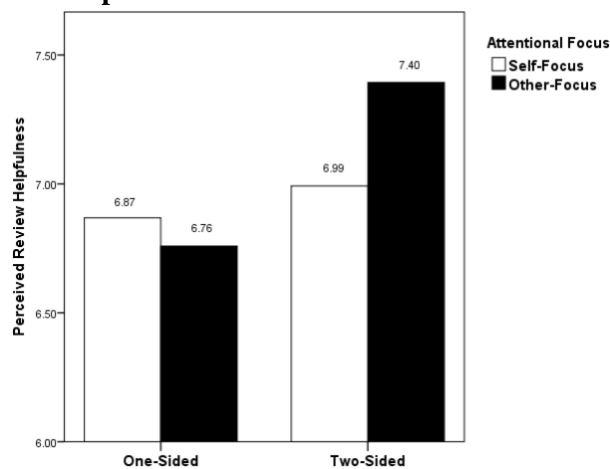
Results

Before further analysis, we checked the manipulations of reviewers' attentional focus and review two-sidedness. We first conducted an ANCOVA for perceived other-focus, with attentional focus entered as a within-subjects factor, two-sidedness as a between-subjects factor, and treatment order as a covariate. Results showed that perceived other-focus in the self-focused condition was significantly lower than that in the other-focused condition ($M = 3.97$ vs. 6.44, $F(1, 156) = 85.39$, $p < 0.001$). A similar ANCOVA showed that perceived two-sidedness in the one-sided condition was significantly lower than that in the two-sided condition ($M = 3.37$ vs. 5.78, $F(1, 156) = 111.14$, $p < 0.001$). Thus, the manipulations of both our independent and moderating variables were successful.

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[6] A summary of the demographic information for participants in each of the experimental studies is provided in Table B.1 of Appendix B.

Next, we conducted a similar ANCOVA to test the main effect of attentional focus on perceived review helpfulness and the moderating effect of review two-sidedness. Results revealed that the overall effect of other-focus on review helpfulness did not reach significance ($M = 6.92$ vs. 7.08, $F(1, 156) = 1.32$, $p = 0.252$). However, consistent with H2, the interaction between attentional focus and review two-sidedness was marginally significant ($F(1, 156) = 3.37$, $p = 0.068$). Pairwise comparisons showed that perceived helpfulness did not significantly differ between self-focused and other-focused reviews in the one-sided condition ($M = 6.87$ vs. 6.76, $F(1, 156) = 0.23$, $p = 0.636$), but the difference in the two-sided condition was significant ($M = 6.99$ vs. 7.40, $F(1, 156) = 4.67$, $p = 0.032$) (see Figure 2).

Figure 2. Perceived Review Helpfulness Across One-Sided and Two-Sided Conditions in Study 2

Discussion

Although this study did not find support for H1 (an overall positive effect of other-focus on review helpfulness) as Study 1, it provided initial evidence for H2: other-focus had a positive effect on perceived helpfulness only for two-sided reviews. The inconclusive evidence for H1 was not surprising for two reasons. First, when an independent variable interacts with a moderator, directly interpreting the overall, total effect of the independent variable on the outcome would be less meaningful because the effect of the independent variable varies at different levels of the moderator (Aguinis et al. 2017; Aiken et al. 1991). Second, the first two studies used distinct methods with complementary strengths and limitations. In particular, the secondary data used in Study 1 could not rule out the influence of unobserved factors (e.g.,

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it is possible that the overall positive effect of other-focus was driven by more efforts of other-focused reviewers rather than the direct manifestations of other-focus in the use of second-person pronouns).

On the other hand, Study 2 also had several limitations. First, there could be different levels of two-sidedness in an actual review. We designed the next study to explore whether the positive effect of other-focus would remain when the review was less two-sided. Second, neither of the first two studies examined the processes that might underlie the effect of attentional focus. We included measures of perceived empathic concern and perceived persuasion motives in the following experiments.

STUDY 3

In Study 3, we examined whether the positive effect of other-focus on perceived review helpfulness would remain when the review was less two-sided, and also explored the underlying processes.

Stimulus Materials

We developed stimuli for this study based on the treatment reviews from Study 2. First, we kept two sets of reviews used in the two-sided condition of Study 2 as stimuli in this study's "high two-sided" condition because they contain an equal number of positive and negative statements. Second, we created corresponding, low two-sided reviews that are slightly positive because the majority of reviews in the real world are positive, and that positive reviews discussing something negative are more commonly observed. Specifically, we decreased the number of negative statements from 2 to 1 (out of 4) and increased the number of positive statements from 2 to 3. The primary difference between the low and high two-sided conditions was the extent of two-sidedness (see Table 4).

Table 4. Review Stimuli in Study 3

	#	Self-Focused Review	Other-Focused Review
Low Two-Sided Condition	1	**Pros:** • This app helps **me** focus on **my** work • It's great that **I** can observe how **I** have been doing to meet goals each week. • It keeps the number of sessions **I** have accomplished and categorizes **my** tasks. **Cons:** • It's *not* easy to organize **my** own time because **I** *cannot* customize the timer.	**Pros:** • This app helps **you** focus on **your** work. • It's great that **you** can observe how **you** have been doing to meet goals each week. • It keeps the number of sessions **you** have accomplished and categorizes **your** tasks. **Cons:** • It's *not* easy to organize **your** own time because **you** *cannot* customize the timer.
	2	**Pros:**	**Pros:**

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		Pros: (continued) • The timer helps **me** say "no" to **my** incoming messages. • It allows **me** to get **my** work done but still get a break. • The ticking sound is clear, so **I** can remember when **I** should take a rest. **Cons:** • It *cannot* sync **my** tracked data between **my** phone and computer.	Pros: (continued) • The timer helps **you** say "no" to **your** incoming messages. • It allows **you** to get **your** work done but still get a break. • The ticking sound is clear, so **you** can remember when **you** should take a rest. **Cons:** • It *cannot* sync **your** tracked data between **your** phone and computer.
High Two-Sided Condition	1	**Pros:** • This app helps **me** focus on **my** work • It's great that **I** can observe how **I** have been doing to meet goals each week. **Cons:** • It *doesn't* keep the number of sessions **I** have accomplished or categorize **my** tasks. • It's *not* easy to organize **my** own time because **I** *cannot* customize the timer.	**Pros:** • This app helps **you** focus on **your** work. • It's great that **you** can observe how **you** have been doing to meet goals each week. **Cons:** • It *doesn't* keep the number of sessions **you** have accomplished or categorize **your** tasks. • It's *not* easy to organize **your** own time because **you** *cannot* customize the timer.
	2	**Pros:** • The timer helps **me** say "no" to **my** incoming messages. • It allows **me** to get **my** work done but still get a break. **Cons:** • The ticking sound is *unclear*, so **I** *cannot* remember when **I** should take a rest. • It *cannot* sync **my** tracked data between **my** phone and computer.	**Pros:** • The timer helps **you** say "no" to **your** incoming messages. • It allows **you** to get **your** work done but still get a break. **Cons:** • The ticking sound is *unclear*, so **you** *cannot* remember when **you** should take a rest. • It *cannot* sync **your** tracked data between **your** phone and computer.

Notes: emphases and italics added for illustration purpose only (i.e., not shown to participants).

Procedure and Measures

191 undergraduate students from a U.S. university participated in this experiment in exchange for extra credit. This study followed a similar procedure to Study 2, except that we also asked participants to report their perceptions of the reviewer's empathic concern and persuasion motives along 9-point scales. We measured perceived empathic concern using three items adapted from Goldstein et al. (2014) and Toi and Batson (1982) (e.g., "When reading about this review, to what extent do you think this reviewer understands your feelings?"), and measured perceived persuasion motives using four items adapted from Campbell and Kirmani (2000) and Williams et al. (2004) (e.g., "While I was reading the review, I thought it was pretty obvious that the reviewer was trying to influence me.").
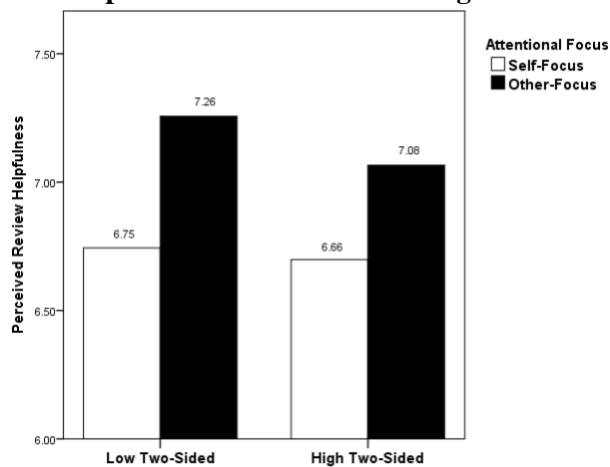
Results

First, we conducted manipulation checks. Results revealed that perceived other-focus in the self-focused condition was significantly lower than that in the other-focused condition ($M = 3.87$ vs. 6.51, $F(1,$

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188) = 123.06, $p < 0.001$), and that perceived two-sidedness in the low two-sidedness condition was significantly lower than that in the high two-sidedness condition ($M = 5.22$ vs. 5.95, $F(1, 188) = 18.07$, $p < 0.001$). Thus, the manipulations of both variables were successful.
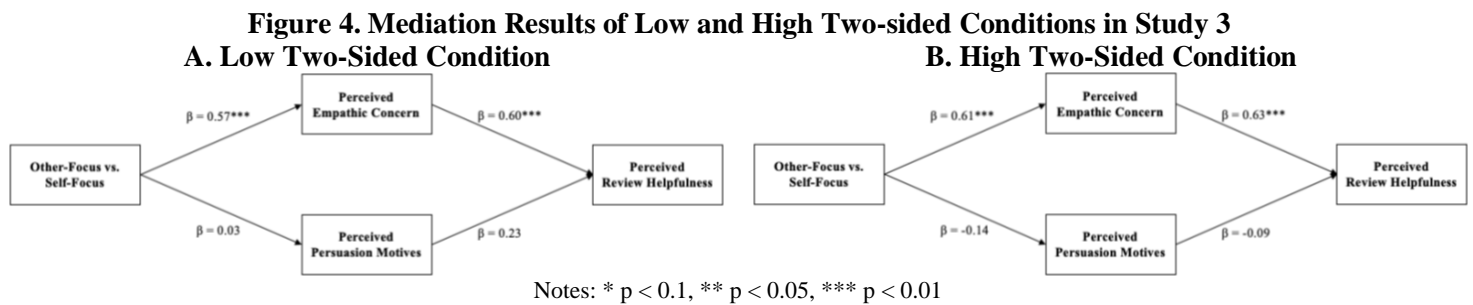
Next, we conducted an ANCOVA to explore the effect of attentional focus on perceived review helpfulness under different levels of review two-sidedness, with attentional focus entered as a within-subjects factor, level of two-sidedness as a between-subjects factor, and treatment order as a covariate. Results revealed that self-focused reviews were perceived as less helpful than other-focused reviews ($M = 6.71$ vs. 7.17, $F(1, 188) = 11.09$, $p = 0.001$), and that the interaction between attentional focus and the level of review two-sidedness did not reach significance ($F(1, 188) = 0.10$, $p = 0.753$). Pairwise comparisons revealed a significant increase in perceived helpfulness from self-focused to other-focused review when two-sidedness was low ($M = 6.75$ vs. 7.26, $F(1, 188) = 6.62$, $p = 0.011$) and when it was high ($M = 6.66$ vs. 7.08, $F(1, 188) = 4.56$, $p = 0.034$). Thus, other-focus had a positive effect on perceived review helpfulness even when the reviews were low in two-sidedness (see Figure 3).

Figure 3. Perceived Review Helpfulness Across Low and High Two-Sided Conditions in Study 3

We also examined the probable mechanisms—perceived empathic concern and perceived persuasion motives—that could underlie the effect of attentional focus. We conducted a formal mediation analysis for each two-sided condition based on bootstrapping, using SPSS macro MEMORE developed by Montoya and Hayes (2017). Compared to the conventional approach to testing mediation in a within-subjects design proposed by Judd et al. (2001), the bootstrapping method allows us to test multiple

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mediators in parallel (Montoya and Hayes 2017). Results under the low two-sided condition showed that a reviewer's other-focus had a positive effect on perceived empathic concern ($\beta = 0.57$, $t(95) = 2.83$, $p = 0.006$), which in turn had a positive effect on perceived review helpfulness ($\beta = 0.60$, $t(91) = 7.37$, $p < 0.001$). The indirect effect through perceived empathic concern was positive and significant, as zero was not included in its bias-corrected confidence interval (a*b path coefficient = 0.34, 95% CI = [0.10, 0.62]). On the other hand, the effect of a reviewer's other-focus on perceived persuasion motives did not reach significance ($\beta = 0.03$, $t(95) = 0.33$, $p = 0.739$). The indirect effect through perceived persuasion motives was also insignificant (a*b path coefficient = 0.01, 95% CI = [-0.04, 0.07]) (see Figure 4A). Finally, the effect of other-focus on review helpfulness became insignificant after the mediators were controlled for ($\beta = 0.02$, $t(91) = 0.12$, $p = 0.902$), indicating a full mediation. Results of MEMORE analyses under the high two-sided condition were consistent (see Figure 4B).

Figure 4. Mediation Results of Low and High Two-sided Conditions in Study 3

A. Low Two-Sided Condition

B. High Two-Sided Condition

Notes: * p < 0.1, ** p < 0.05, *** p < 0.01

Discussion

This study provided evidence for the positive effect of other-focus on perceived review helpfulness when the review was not one-sided. We also found evidence for the positive mechanism of perceived empathic concern, which overweighted the negative mechanism in two-sided reviews. However, it remains unclear what processes drive the null effect of other-focus in one-sided reviews. One possible reason is that a negative mechanism was activated and canceled out the positive process of empathic concern. We focused on one-sided reviews and explored this possibility in the next two studies.

STUDIES 4A and 4B

We conducted two studies to examine the probable mechanisms underlying the main effect of attentional focus on perceived helpfulness of one-sided reviews. We used one-sided positive reviews in

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Study 4A and negative reviews in Study 4B. In Study 4A, we created two sets of reviews based on the stimuli used in the one-sided condition of Study 2. Because all treatment reviews were one-sided with a fixed valence, we removed terms "Pros" and "Cons" as well as bullet points. In Study 4B, we constructed corresponding negative reviews by changing all statements to be negative in valence (see Table 5). We also manipulated attentional focus within-subjects at two levels, as in earlier experiments. The cover story, procedure and measures were similar to those in Study 3. 88 respondents from Amazon MTurk participated in Study 4A and 58 undergraduate students participated in Study 4B.

Table 5. Review Stimuli in Studies 4A and 4B

	Positive Reviews Used in Study 4A	
#	**Self-Focused Review**	**Other-Focused Review**
1	This well-designed application helps **me** establish a high level of focus on **my** work and study. It's surprising that **I** can observe, in several forms, how **I** have been doing to meet **my** goals each week. **I** like this app.	This well-designed application helps **you** establish a high level of focus on **your** work and study. It's surprising that **you** can observe, in several forms, how **you** have been doing to meet **your** goals each week. **You'll** like this app.
2	**I** love this powerful app because it allows **me** to save and track **my** progress over time. It keeps a record of **my** work time as well. After a certain period of tracking data, **I** can better understand **my** productivity pattern.	**You'll** love this powerful app because it allows **you** to save and track **your** progress over time. It keeps a record of **your** work time as well. After a certain period of tracking data, **you** can better understand **your** productivity pattern.
	Negative Reviews Used in Study 4B	
1	This badly-designed application doesn't help **me** establish a high level of focus on **my** work and study. It's surprising that **I** cannot observe, in any form, how **I** have been doing to meet **my** goals each week. **I** don't like this app.	This badly-designed application doesn't help **you** establish a high level of focus on **your** work and study. It's surprising that **you** cannot observe, in any form, how **you** have been doing to meet **your** goals each week. **You won't** like this app.
2	**I** don't love this powerless app because it doesn't allow **me** to save and track **my** progress over time. It doesn't keep a record of **my** work time as well. After a certain period of tracking data, **I** cannot better understand **my** productivity pattern.	**You won't** love this powerless app because it doesn't allow **you** to save and track **your** progress over time. It doesn't keep a record of **your** work time as well. After a certain period of tracking data, **you** cannot better understand **your** productivity pattern.

Notes: emphases added for illustration purpose only (i.e., not shown to participants).

Results

We first conducted manipulation checks in both studies. The results revealed that perceived other-focus in the self-focus condition was significantly lower than that in the other-focus condition when the valence was positive ($M = 4.19$ vs. 6.86, $F(1, 86) = 43.69$, $p < 0.001$) and when the valence was negative ($M = 3.12$ vs. 6.88, $F(1, 56) = 49.29$, $p < 0.001$). Thus, the manipulation of our independent variable was successful in both studies.

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Next, we conducted ANCOVAs to explore the effect of attentional focus on perceived review helpfulness, with treatment order entered as a covariate. Results revealed that the effect of other-focus on review helpfulness did not reach significance in either Study 4A ($M = 7.01$ vs. 6.98, $F(1, 86) = 0.02$, $p = 0.898$) or Study 4B ($M = 6.59$ vs. 6.43, $F(1, 56) = 0.31$, $p = 0.580$).

Despite the lack of a main effect, further mediation tests are still valid and necessary if opposing mediating processes might exist (Hayes 2009; MacKinnon et al. 2000). When multiple processes operate in opposite directions and cancel each other out, the main effect could appear insignificant. To examine this possibility, we first conducted a formal mediation analysis in Study 4A using SPSS macro MEMORE (Montoya and Hayes 2017). The results revealed that a reviewer's other-focus had a positive effect on perceived empathic concern ($\beta = 0.50$, $t(87) = 1.92$, $p = 0.058$), which in turn had a positive effect on perceived review helpfulness ($\beta = 0.47$, $t(83) = 6.42$, $p < 0.001$). The indirect effect of other-focus through perceived empathic concern was positive and significant (a*b path coefficient = 0.23, 95% CI = [0.01, 0.49]). A reviewer's other-focus also had a positive effect on perceived persuasion motives ($\beta = 0.67$, $t(87) = 3.90$, $p < 0.001$), which then had a negative effect on perceived review helpfulness ($\beta = -0.30$, $t(83) = -2.72$, $p = 0.008$). The indirect effect through perceived persuasion motives was also significant (a*b path coefficient = -0.20, 95% CI = [-0.41, -0.03]) (see Figure 5A). Mediation results in Study 4B were similar (see Figure 5B).

Figure 5. Mediation Results of One-Sided Positive and Negative Conditions in Studies 4A and 4B

A. Study 4A   B. Study 4B

Notes: * p < 0.1, ** p < 0.05, *** p < 0.01

Discussion

Study 4A replicated the earlier finding of an insignificant main effect of attentional focus on the perceived helpfulness of *one-sided*, positive reviews, and Study 4B extended this finding to negative

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reviews. Both studies also provided evidence that the null effect of attentional focus in one-sided reviews could arise from processes operating in opposite directions and canceling each other out.

The designs of the previous experiments have a few remaining limitations. First, the use of within-subjects designs to manipulate attentional focus has a variety of advantages such as increased statistical power and reduced dependence on random assignments (Charness et al. 2012). Although such designs might increase the likelihood of a demand effect if participants could successfully guess the researchers' predictions and respond accordingly (Rosenthal 1976; White 1977), we deem this likelihood to be low in prior experiments because our hypotheses are fairly nuanced. On the other hand, this concern would be eliminated in a between-subjects design in which participants were exposed to only one level of attentional focus.

Second, we manipulated reviewers' attentional focus through their use of personal pronouns. Although personal pronouns have been demonstrated as a proper proxy and indicator of one's focus of attention in prior research (e.g., Pennebaker et al. 2003; Simmons et al. 2005), attentional focus can manifest in ways beyond personal pronouns. For example, an other-focused reviewer may write a review such as "This timer helps *users* focus on work" that does not contain either first-person or second-person pronouns.

Third, the impact of attentional focus on review helpfulness could be explained by a number of alternative explanations, such as perceived politeness (i.e., the extent to which one is perceived to be respectful and considerate of other people; see Hill et al. 1986), perceived psychological closeness (i.e., perceptions of attachment and connections to others; see Gino and Galinsky 2012), perceived interpersonal closeness (i.e., one's sense of interpersonal interconnectedness and the inclusion of others in selves; see Aron et al. 1992; Berscheid et al. 1989), perceived altruism (i.e., the motivation of helping others and increasing the welfare of the person in need; see Batson et al. 1991), perceived self-reference (i.e., the statements in a review can relate to any aspect of the reviewer him/herself rather than other readers, such as the reviewer's past experience and personality traits; see Rogers et al. 1977; Watson et al. 2008), and perceived reviewer attribution (i.e., the extent to which readers attribute opinions in a review

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to the reviewer rather than the product experience; see Chen and Lurie 2013; Frank and Gilovich 1989).[7] We addressed these limitations in our final experiment.

STUDY 5

In Study 5, we focused on only two-sided reviews because personal pronouns were revealed to influence the helpfulness of only two-sided reviews in prior experiments. In this final study, we manipulated a reviewer's attentional focus between-subjects at two levels (i.e., participants read either a self-focused or other-focused review, not both), expanded the operationalization of other-focus beyond personal pronouns by employing words such as "users" and "someone," and measured a large list of possible alternative explanations.

Stimulus Materials

We developed stimuli for this study based on the treatment reviews used in Study 2's two-sided condition. We first created a self-focused, two-sided review, which used only first-person pronouns to describe user experiences from the reviewer's viewpoint and contained an equal number of positive and negative statements. We then constructed two other-focused reviews with a focus on prospective readers, in which we replaced first-person pronouns with second-person pronouns or non-pronoun words referring to prospective readers (such as "users" and "someone"). Apart from this manipulation, we held everything else identical. All treatment reviews are presented in Table 6.

Table 6. Review Stimuli in Study 5

Self-Focused Review (First-Person Pronouns)	**Pros:** • This timer helps **me** focus on work. • It allows **me** to get work done but still get a break. • It's great that the app keeps track of **my** progress over time. **Cons:** • The ticking sound is unclear, so **I** cannot remember when to take a rest. • It cannot sync **my** tracked data between the phone and computer. • **I** cannot customize the timer.
Other-Focused Review (Second-Person Pronouns)	**Pros:** • This timer helps **you** focus on work. • It allows **you** to get work done but still get a break.

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[7] In a supplementary experiment (see Appendix D), we investigated whether the impact of attentional focus on review helpfulness could be explained by this list of alternative explanations except for perceived self-reference and perceived reviewer attribution. In addition, we explored whether our manipulation of review two-sidedness accidentally varied review comprehensiveness. Results of this supplementary experiment ruled out all these alternative explanations except readers' perception of reviewer altruism.

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		• It's great that the app keeps track of **your** progress over time.
	Cons:	
		• The ticking sound is unclear, so **you** cannot remember when to take a rest.
		• It cannot sync **your** tracked data between the phone and computer.
		• **You** cannot customize the timer.
Other-Focused Review (Without Personal Pronouns)	Pros:	
		• This timer helps **users** focus on work.
		• It allows **someone** to get work done but still get a break.
		• It's great that the app keeps track of the **user's** progress over time.
	Cons:	
		• The ticking sound is unclear, so **users** cannot remember when to take a rest.
		• It cannot sync **someone's** tracked data between the phone and computer.
		• A **user** cannot customize the timer.

Notes: emphases added for illustration purpose only (i.e., not shown to participants).

Procedure and Measures

411 undergraduate students from a U.S. university took part in this experiment. Each participant was randomly assigned to the I/me-only, you/your-only, or user/someone-only condition. The cover story was similar as in previous studies, except that participants' search of a time management app returned only one option ("Pomodoro Timer") and they were asked to read and evaluate only one review of this app. The procedure was similar to Studies 4A and 4B, with two exceptions. First, we adopted an alternative, long-form measure of the dependent variable using two items adapted from Sen and Lerman (2007) and Chen and Lurie (2013) (e.g., "Assuming that you were thinking about purchasing the Pomodoro Timer app in real life, how likely would you be to use this review in your decision-making?"). Second, participants also answered questions pertaining to alternative explanations (see Appendix C).

Results

First, we conducted a manipulation check of attentional focus. Because perceived other-focus in the you-only condition was not significantly different from that in the user-only condition ($M = 5.69$ vs. 5.43, $F(1, 271) = 1.364$, $p = 0.244$), we combined these two conditions as the other-focused condition in the following analyses. A further manipulation check revealed that perceived other-focus in the self-focused condition was significantly lower than that in the other-focused condition ($M = 4.54$ vs. 5.56, $F(1, 409) = 26.692$, $p < 0.001$). Thus, our manipulation of attentional focus was successful.
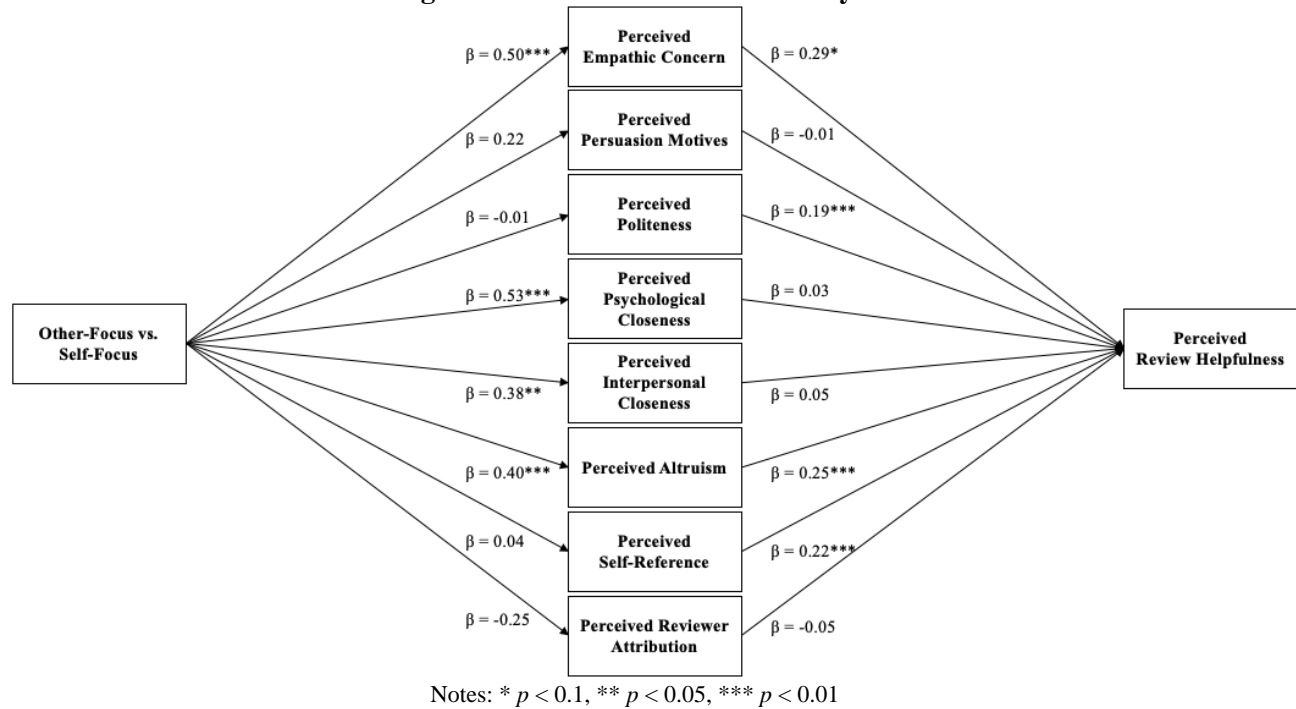
Next, we conducted a one-way ANOVA with perceived review helpfulness entered as the dependent variable and other-focus entered as a between-subjects factor. Results revealed that perceived

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review helpfulness in the self-focused condition was significantly lower than that in the other-focused condition (M = 5.70 vs. 6.26, $F(1, 409)$ = 8.207, p = 0.004), providing consistent evidence for the positive effect of other-focus on perceived helpfulness of two-sided reviews.

In addition, we explored the possible mechanisms underlying the effect of attentional focus. We conducted a formal mediation analysis based on bootstrapping, using SPSS macro PROCESS developed by Hayes (2013). Compared to Baron and Kenny's (1986) conventional approach, the bootstrapping method does not require the assumption of a normal sampling distribution (Bollen and Stine 1990; Preacher and Hayes 2008; Shrout and Bolger 2002), and it can test the mediating effects of multiple variables in parallel in a between-subjects design (Hayes 2013). Results showed that other-focus had a positive effect only on perceived empathic concern and three other variables (empathic concern: β = 0.50, $t(409)$ = 2.75, p = 0.006; psychological closeness: β = 0.53, $t(409)$ = 2.72, p = 0.007; interpersonal closeness: β = 0.38, $t(409)$ = 2.36, p = 0.019; altruism: β = 0.40, $t(409)$ = 2.92, p = 0.004). Among these variables, only perceived empathic concern and perceived altruism are possible mechanisms as they had a positive effect on review helpfulness (empathic concern: β = 0.29, $t(401)$ = 1.780, p = 0.076; altruism: β = 0.25, $t(401)$ = 3.24, p = 0.001) (see Figure 6). Moreover, the indirect effects through perceived empathy concern and perceived altruism were positive and significant (empathic concern: a*b path coefficient = 0.11, 95% CI = [0.03, 0.24]; altruism: a*b path coefficient = 0.10, 95% CI = [0.02, 0.23]), while the indirect effects through all the other variables were not significant. Taken together, we found converging evidence that the positive effect of other-focus on perceived helpfulness of two-sided reviews could be explained by perceived empathic concern. In addition, consistent with the results of our supplementary study reported in Appendix D, we were able to rule out the majority of alternative explanations except perceived altruism. However, this alternative explanation does not necessarily conflict with our empathy-based arguments because altruism is closely associated with empathic concern (e.g., Coke et al. 1978);

previous studies in prosocial behavior found that empathic feelings can boost one's willingness to help

others (e.g., Batson et al. 1991; Batson et al. 1997).[8]

Figure 6. Mediation Results in Study 5

β = 0.50***	Perceived Empathic Concern	β = 0.29*
β = 0.22	Perceived Persuasion Motives	β = -0.01
β = -0.01	Perceived Politeness	β = 0.19***
β = 0.53***	Perceived Psychological Closeness	β = 0.03
β = 0.38**	Perceived Interpersonal Closeness	β = 0.05
β = 0.40***	Perceived Altruism	β = 0.25***
β = 0.04	Perceived Self-Reference	β = 0.22***
β = -0.25	Perceived Reviewer Attribution	β = -0.05

Other-Focus vs. Self-Focus → Perceived Review Helpfulness

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

GENERAL DISCUSSION

Using distinct methodologies, the six studies provided converging evidence that reviewers' other-focus (vs. self-focus) plays a nontrivial role in prospective consumers' perception of review helpfulness, and that the effect of other-focus is greater for two-sided reviews than one-sided reviews (see Table 7 for a summary of our findings). For two-sided reviews, Studies 3 and 5 found evidence that the positive process of perceived empathic concern outweighs the negative process of perceived persuasion motives, resulting in an overall positive effect of other-focus. For one-sided reviews, however, Studies 4A and 4B

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[8] Since perceived altruism could be a natural consequence of perceived empathic concern, we used SPSS macro PROCESS to further test the serial mediation effects of perceived empathic concern and perceived altruism. The results showed that other-focus had a positive effect on perceived empathic concern ($β = 0.50$, $t(409) = 2.75$, $p = 0.006$), which had a positive effect on perceived altruism ($β = 0.29$, $t(408) = 8.59$, $p < 0.001$), which in turn had a positive effect on review helpfulness ($β = 0.52$, $t(407) = 7.83$, $p < 0.001$). The indirect effect of other-focus on review helpfulness through the successive mediators of perceived empathic concern and perceived altruism was significant (a*b path coefficient = 0.08, 95% CI = [0.02, 0.15]). Finally, the effect of other-focus on review helpfulness became insignificant after the two mediators were controlled for ($β = 0.23$, $t(407) = 1.35$, $p = 0.18$). These results indicated that the significant effect of other-focus on perceived helpfulness of two-sided reviews was fully and successively mediated by perceived empathic concern and perceived altruism.

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showed that the positive and the negative processes operate in opposite directions and cancel each other

out, leading to a null effect of other-focus on review helpfulness.

Table 7. Summary of Findings

	H1: A shift in a reviewer's focus of attention from oneself to others increases the helpfulness of the review perceived by prospective consumers.	H2: The positive effect of a reviewer's other-focus (vs. self-focus) on perceived review helpfulness is greater for two-sided reviews than for one-sided reviews, such that a) other-focus has a positive effect for two-sided reviews, and that b) the positive effect for one-sided reviews is weaker or non-existent.
Study 1	Overall Effect Supported	Not Explored
Study 2	Overall Effect Not Supported	Supported
Study 3 *(Two-Sided)*	Supported (because the positive mechanism outweighs the negative mechanism in two-sided reviews)	H2a Supported
Study 4A/B *(One-Sided Positive/Negative)*	Not Supported (because positive and negative mechanisms cancel out each other in one-sided reviews)	H2b Supported
Study 5 *(Two-Sided)*	Supported (we ruled out alternative explanations except altruism)	H2a Supported

Theoretical Implications

Our paper makes a number of theoretical contributions. First, this research examines the

implications of reviewers' attentional focus, an important but under-studied factor that can influence

prospective consumers' helpfulness evaluation of reviews. Invisible words such as personal pronouns and

"someone" do not carry substantial meanings, but they reflect reviewers' focus of attention while writing

a review. Existing studies with measures of personal pronouns observed that first-person pronouns could

have a negative effect on review helpfulness (e.g., Wang and Karimi 2019) or no effect (e.g., Schindler

and Bickart 2012). These contradictory pieces of evidence suggest that the role of attentional focus might

be more nuanced in the unique context of online reviews. This paper represents the first systematic

investigation of its role by proposing the broader concept of attentional focus, developing a theoretical

model on how and when shifting reviewers' focus of attention influences perceived review helpfulness,

testing the model rigorously, and uncovering underlying mechanisms using a multi-method, multi-study

approach (Burton-Jones 2009).

Second, our findings also contribute to the attentional focus literature. The prior examinations of

attentional focus in offline settings generally involve two individuals where one individual can turn the

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focus of his/her attention to the other individual (e.g., Arriaga and Rusbult 1998; Galinsky and Moskowitz 2000). Although a reviewer in our online setting can also turn the focus of his/her attention to prospective consumers and consider their thoughts and feelings, the reviewer does not know future consumers or how many consumers would read his/her review. Thus, our findings provide valuable insights on whether and when the positive effect of other-focus observed in "one-to-one" offline settings would play out in the "one-to-many" online context as well. In addition, prior studies of attentional focus focused primarily on relationships between friends or family members, but a few studies found that a focus on others also plays a significant role between strangers in initial encounters (Fraley and Aron 2004; Galinsky and Moskowitz 2000). We extend this line of inquiry to the online environment, revealing that a shift in reviewers' attentional focus can impact prospective consumers who are total strangers. Moreover, almost all the prior research focused on the impact of an individual's attentional focus on the individual himself/herself. In line with sparse recent evidence that attentional focus can also influence the target of attention (Goldstein et al. 2014), we provide additional evidence in online environments by revealing the *interpersonal* impact of reviewers' attentional focus on readers of online reviews.

Third, we take advantage of the unique nature of online reviews and explore a context-specific boundary condition for the impact of attentional focus. Although other-focused attention has been revealed to bring various benefits in various offline settings (e.g., Coke et al. 1978; Galinsky and Moskowitz 2000; Hodges et al. 2011), recent research suggests that its effect is not universal and it may backfire under certain circumstances (Sassenrath et al. 2016; Vorauer 2013). Online reviews are unique in that their primary purposes are to inform and persuade future consumers (Sparks et al. 2013). We build on the negative pathway of perceived persuasion motives from the persuasion knowledge literature and propose review two-sidedness as a context-specific boundary condition. Through multiple experiments, we provide compelling evidence that the absence of two-sided opinions in a review can turn "on" the negative pathway of perceived persuasion motives and eliminate the positive effect of other-focus on review helpfulness. These findings reveal that the benefit of other-focus may not always materialize in

persuasion contexts, answer recent calls to explore its potential pitfalls (Hodges et al. 2011), and suggest the need for more research to explore the nuanced role of attentional focus in online environments.

Practical Implications

Because more helpful reviews are presumably more influential for consumers, product/service providers stand to benefit from identifying helpful reviews early on and dealing with them more proactively. We find that reviews that focus on review readers are perceived as more helpful only if the reviews contain mixed opinions. As a result, companies can identify mixed-opinion reviews that focus on prospective consumers and address the negative opinions proactively (e.g., offering a genuine response) to reduce their potential damages. Moreover, the identification of such reviews could be automated, as personal pronouns (e.g., "you" and "I") are clear signals of reviewers' attentional focus.

In addition, our findings provide insights for review platforms and reviewers. With more helpful reviews, a review platform can increase consumer perceptions of the platform and increase site "stickiness," both of which encourage consumers to revisit or spend more time at the site (Kumar and Benbasat 2006; Mudambi and Schuff 2010). Based on our results, review platforms might consider incorporating a reviewer's attentional focus into their review-writing guidelines to encourage the creation of more helpful reviews. For example, the guideline may simply ask reviewers to consider future consumers' needs when writing their reviews. An easy change could be using more second-person pronouns or others-related words such as "someone", "user", and "customer." The adoption of other-focused "invisible" words is a much simpler writing strategy than improving the quality or length of reviews that has been advocated in prior research. On the other hand, other-focused reviewers striving to provide more helpful content should be aware that a simple switch to other-focused "invisible" words may not be effective when their opinions are purely positive or purely negative. Instead, a shift in attentional focus combined with both pros and cons may be most effective in boosting review helpfulness.

Limitations and Future Research

Our research has a few limitations that provide avenues for future research. First, although we found the overall positive effect of other-focus on review helpfulness in the archival study (Study 1), we

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did not obtain evidence for this overall positive effect in Study 2. A possible explanation is the distinct nature of experiments, in which we could cleanly vary attentional focus while holding the review's substantive content identical. In the archival study, however, reviewers who focus on others may not only use more other-focused "invisible" words but also craft substantive content in different manners. Thus, attentional focus may also influence the writing process of review writers and the characteristics of review text (e.g., breadth of discussed topics, depth of opinions, etc.). The effect of attentional focus on reviewer behavior is beyond the scope of the current paper, but it is surely worthy of future investigation.

Second, in the majority of our experiments operationalizing attentional focus through the use of personal pronouns, we varied this factor at two extreme levels (first-person only vs. second-person only). However, reviewers in reality could use a mix of first-person, second-person, and even third-person pronouns. Although the role of third-person pronouns and the impact of mixing different types of personal pronouns in online reviews are out of this paper's scope, they are worthy of future exploration. In addition to personal pronouns and others-related words (e.g., "users", "someone") discussed in this paper, future research can also explore other types of words reflecting a shift in the focus of reviewers' attention.

Third, while we have demonstrated the impact of attentional focus on review readers, more research is needed to explore ways of "nudging" reviewers to be more other-focused (see Gutt et al. 2019). For example, which platform-level intervention would be more effective in motivating reviewers to focus on others: giving them a review template or priming them to take others' perspectives? What kind of reviewers are more likely to be "nudged" to be other-focused? How does revealing reviewer identity or allowing anonymous reviews influence reviewers' tendency to focus on others? Answers to these questions can help firms put our findings into action.

Fourth, future research is needed to examine if our findings can be extended to other relevant outcomes and other online settings. Although our dependent variable, review helpfulness, is important as helpful reviews provide diagnostic value for consumers to make judgments and decisions, more research is needed to explore the impact of attentional focus on other relevant outcomes during consumers'

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decision-making process, such as consumers' attitudes and their intention to purchase a product or adopt a service. Additionally, despite our theoretical framework and arguments based on empathic concern and persuasion motives should apply to persuasive writing in general, more work is needed to examine the external validity of our findings in other online settings such as other types of consumer reviews (e.g., service reviews) and other forms of persuasive writing (e.g., persuasive appeals in advertising).

CONCLUSION

Recognizing the critical role of reviewers' attentional focus in online reviews, we examine how, why, and when a reviewer's focus on others can influence consumers' helpfulness evaluation of the online review. We propose that other-focus does not always increase review helpfulness, and that its overall effect depends on review two-sidedness. Through an archival analysis and five experiments, we provide converging evidence for our theoretical framework and uncover underlying mechanisms. These findings emphasize the importance of studying the role of attentional focus in online reviews and open up exciting opportunities for future research.

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APPENDICES

Appendix A: Additional Robustness Checks in Study 1

We conducted additional analyses to test the robustness of our results. An app can have multiple reviews in our sample. Reviews of the same app will be more similar to each other than to reviews of a different app. Such similarity can affect intra-class correlation (ICC) and underestimate the standard errors of regression coefficients (Klein and Kozlowski 2000; Raudenbush and Bryk 2002). Although we included app-level control variables (e.g., average rating) in our main analyses, they may not fully capture the unobserved app-level heterogeneity. Therefore, we conducted two more robustness checks to account for differences between apps. First, we used a random coefficient multilevel fractional logit model, in which we included all the variables from the main analysis (see Model 1 of Table 2) as well as an app-level random intercept capturing unobserved app-level heterogeneity. Second, we conducted a similar, random coefficient multilevel negative binomial regression by including all the variables from Model 3 of Table 2 along with an app-level random intercept. Results of both robustness checks (see Models 1 and 2 in Table A.1) were in line with the main analysis.

Table A.1. Results of Additional Robustness Checks

Variables	Model 1		Model 2	
	Fractional Logit Model (DV: review helpfulness)		Negative Binomial Model (DV: number of helpful votes)	
	Coefficient	Robust Std. Error	Coefficient	Robust Std. Error
Number of Total Votes			0.099***	(0.004)
Rating	0.424***	(0.011)	0.150***	(0.004)
Length	0.007***	(0.000)	0.002***	(0.000)
Reading Difficulty	0.013***	(0.002)	0.007***	(0.001)
Average Rating	-0.154***	(0.015)	-0.110***	(0.005)
Count of Ratings	-0.000***	(0.000)	-0.000***	(0.000)
Paid	0.246***	(0.019)	0.109***	(0.006)
Other-Focus	0.076***	(0.014)	0.040***	(0.005)
Category Dummies	Included			
Constant	-0.060	(0.105)	-0.222***	(0.021)
N	301517		301517	
Log Likelihood	-143887.57		-509059.82	
Chi Square	4683.04		9648.66	

Notes: Robust standard errors in parentheses; Variance of random intercepts omitted; * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Appendix B: Demographic Table

Table B.1. Demographic Table

Study #	Students vs. MTurk Subjects	# of Participants	# of Male Participants	Participants Originally from US (%)	Average Age	Participants Achieved/Achieving Bachelor's Degree (%)
Study 2	MTurk	159	75	98%	49	64%
Study 3	Students	191	71	96%	21	100% (91% were juniors or above)
Study 4A	MTurk	88	33	95%	37	88%
Study 4B	Students	58	24	86%	20	100% (50% were juniors or above)
Study 5	Students	411	212	79%	22	100% (63% were freshmen)
The Supplementary Study	MTurk	202	120	99%	35	68%

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Appendix C: Variables Measured in Studies 2-5 and the Supplementary Study

Review helpfulness (short-form): (Sen and Lerman 2007) (used in Studies 2, 3, 4A, and 4B)
Assuming that you were considering purchasing App 1 (2, or 3) in real life, how would you describe the review above?
- not at all helpful / very helpful
- not at all useful / very useful
- not at all informative / very informative

Review helpfulness (long-form): (Chen and Lurie 2013; Sen and Lerman 2007) (used in Study 5)
- Assuming that you were thinking about purchasing the Pomodoro Timer app in real life, how likely would you be to use this review in your decision-making? <very unlikely / very likely>
- Assuming that you were thinking about purchasing the Pomodoro Timer app in real life, how much influence would this review have on your decision? <very little influence / a great deal of influence>

Perceived other-focus: (Grant and Berry 2011; Pennebaker et al. 2003; Simmons et al. 2005) (used in manipulation check of Studies 2-5 and the supplementary study)
Based on the review above, to what extent do you disagree or agree with the following? <strongly disagree / strongly agree>
- The reviewer described the app from the perspective of other people (e.g. you) reading the review.
- The reviewer stood in other people's shoes when describing the app.
- The reviewer described the review through the eyes of potential customers of the app.

Review two-sidedness: (Jensen et al. 2013) (used in manipulation check of Study 2, Study 3, and the supplementary study)
Based on the review above, to what extent do you think this review is?
- very one-sided / very two-sided
- listing only pros or only cons / listing both pros and cons to a similar extent
- containing consistent opinions / containing conflicting opinions

Perceived empathic concern: (Goldstein et al. 2014; Plank et al. 1996; Toi and Batson 1982) (used in Studies 3, 4A, 4B, and 5)
Based on the reviews above, please answer the following questions: <not at all / very much>
- When reading about this review, to what extent do you think this reviewer understands your feelings?
- When reading about this review, to what extent do you think this reviewer is concerned about you?
- When reading about this review, to what extent do you think this reviewer empathizes with you?

Perceived persuasion motives: (Campbell and Kirmani 2000; Williams et al. 2004) (used in Studies 3, 4A, 4B, and 5)
Based on the review above, to what extent do you disagree or agree with the following? <strongly disagree / strongly agree>
- While I was reading the review, I thought it was pretty obvious that the reviewer was trying to influence me.
- I think this reviewer was using tricks to persuade me.
- This reviewer used inappropriate tactics in presenting information.
- While I was reading the review, I thought the reviewer was writing the review to manipulate potential users.

Perceived politeness: (Bargh et al. 1996; Chen and Lurie 2013) (used in Study 5 and the supplementary study)
Using the scales below, how would you describe the above user review?

- not at all polite / very polite
- not at all courteous / very courteous
- not at all respectful / very respectful

Perceived psychological closeness: (Gino and Galinsky 2012) (used in Study 5 and the supplementary study)
Based on the review above, to what extent do you disagree or agree with the following? <strongly disagree / strongly agree>
- I would enjoy having the reviewer as a friend.
- I feel I am similar to the reviewer.
- I feel I am related to the reviewer.
- I feel I am psychologically close to the reviewer.

Perceived interpersonal closeness: (Aron et al. 1992) (used in Study 5 and the supplementary study)
Base on the review above, please circle the picture that best describes *how closely you feel* to the reviewer.

Note: Please treat:
    "**Self**" as your self
    "**Other**" as the reviewer who wrote the review

Perceived altruism: (Price et al. 1995) (used in Study 5 and the supplementary study)
In your opinion, how important is each of the following for this reviewer when he/she was writing the review? <not at all important / very important>
- To help other consumers.
- To share his/her opinions.
- To give to others.
- To be unselfish.

Perceived self-reference: (Rogers et al. 1977; Watson et al. 2008) (used in Study 5)
Using the scales below, to what extent do you disagree or agree with the following? <strongly disagree / strongly agree>
- The review describes the review writer's evaluation of the app.
- The review content is related to the review writer's opinion.
- The statements contained in the review can relate to the review writer's experience.

Perceived reviewer attribution: (Chen and Lurie 2013; Frank and Gilovich 1989) (used in Study 5)
Using the scales below, please answer the following questions: <minimal role / maximal role>
- In your opinion, how large a role did personal factors (e.g., the reviewer's personality, traits, character, personal style, attitudes, mood) play in the reviewer's decision to write the review?
- In your opinion, how large a role did the app experience (e.g., app quality, app features) play in the reviewer's decision to write the review?

Review comprehensiveness: (Yang et al. 2005) (used in the supplementary study)
Based on the review above, to what extent do you disagree or agree with the following statements about the information provided in the review? <strongly disagree / strongly agree>
- This review offers complete descriptions about the app.

- This review offers complete content.
- This review offers sufficient information about the app.
- This review offers detailed app information.

Review valence: (MacKenzie and Lutz 1989) (used in the supplementary study)
Based on the review above, how would you describe the reviewer's feelings regarding the experience he/she wrote about?
- very negative / very positive
- very unfavorable / very favorable
- very unpleasant / very pleasant

Appendix D: The Supplementary Study

We conducted this supplementary study to examine alternative explanations for the effect of attentional focus and the moderating effect of review two-sidedness. In Studies 3 and 4, we measured perceived empathic concern and perceived persuasion motives as probable mechanisms underlying the main effect of other-focus on review helpfulness. At the same time, the positive effect of other-focus may also arise from perceived politeness, perceived psychological closeness, perceived interpersonal closeness, and perceived altruism. In addition, our manipulation of review two-sidedness might also vary review comprehensiveness (i.e., the adequacy and completeness of information), representing a possible confound (Cheung et al. 2008; Yang et al. 2005). We measured these additional variables in this supplementary experiment to explore their possible roles.

Like the main studies, we manipulated attentional focus within-subjects at two distinct levels (self-focus vs. other-focus). We manipulated two additional factors between-subjects: review two-sidedness at three levels (one-sidedness vs. low two-sidedness vs. high two-sidedness) and review valence at three levels (negative vs. neutral vs. positive). These two factors are not entirely independent, as a review cannot be high in two-sidedness and positive or negative in valence at the same time. In total, we had five between-subjects conditions: negative one-sided, positive one-sided, negative low two-sided, positive low two-sided, and neutral high two-sided conditions.[9]

Stimulus Materials

We developed stimuli for the five conditions based on treatment reviews in Studies 2 and 3. First, we kept treatment reviews used in Study 2's one-sided condition as positive one-sided condition, Study 2's two-sided condition as neutral high two-sided condition, and Study 3's low two-sided condition as positive two-sided condition in this study. Next, we constructed stimuli for negative one-sided condition and negative low two-sided condition in this study based on two sets of treatment reviews used in Study 2's two-sided condition. Similar to Study 3, we increased the number of negative statements from 2 to 4

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[9] The other four combinations do not exist: neutral one-sided, neutral low two-sided, negative high two-sided, and positive high two-sided conditions.

(out of 4) and removed positive statements in negative one-sided conditions. The number of negative

statements for negative low two-sided conditions was increased from 2 to 3 and the number of positive

statements was decreased from 2 to 1. Substantive content was held identical. All review stimuli are

presented in Table D.1.

Table D.1. Review Stimuli in the Supplementary Study

	#	Self-focused Review	Other-Focused Review
Negative One-Sided	1	**Pros:** None. **Cons:** • This app *doesn't* help **me** focus on **my** work. • It's *disappointing* that **I** *cannot* observe how **I** have been doing to meet goals each week. • It *doesn't* keep the number of sessions **I** have accomplished or categorize **my** tasks. • It's *not* easy to organize **my** own time because **I** *cannot* customize the timer.	**Pros:** None. **Cons:** • This app *doesn't* help **you** focus on **your** work. • It's *disappointing* that **you** *cannot* observe how **you** have been doing to meet goals each week. • It *doesn't* keep the number of sessions **you** have accomplished or categorize **your** tasks. • It's *not* easy to organize **your** own time because **you** *cannot* customize the timer.
	2	**Pros:** None. **Cons:** • The timer *fails* to help **me** say "no" to **my** incoming messages. • It allows **me** to get **my** work done but get *no* break. • The ticking sound is *unclear*, so **I** *cannot* remember when **I** should take a rest. • In addition, it *cannot* sync **my** tracked data between **my** phone and computer.	**Pros:** None. **Cons:** • The timer *fails* to help **you** say "no" to **your** incoming messages. • It allows **you** to get **your** work done but get *no* break. • The ticking sound is *unclear*, so **you** *cannot* remember when **you** should take a rest. • In addition, it *cannot* sync **your** tracked data between **your** phone and computer.
Positive One-Sided	1	**Pros:** • This app helps **me** focus on **my** work • It's great that **I** can observe how **I** have been doing to meet goals each week. • It keeps the number of sessions **I** have accomplished and categorizes **my** tasks. • It's easy to organize **my** own time because **I** can customize the timer. **Cons:** None.	**Pros:** • This app helps **you** focus on **your** work. • It's great that **you** can observe how **you** have been doing to meet goals each week. • It keeps the number of sessions **you** have accomplished and categorizes **your** tasks. • It's easy to organize **your** own time because **you** can customize the timer. **Cons:** None.
	2	**Pros:** • The timer helps **me** say "no" to **my** incoming messages. • It allows **me** to get **my** work done but still get a break. • The ticking sound is clear, so **I** can remember when **I** should take a rest. • In addition, it can sync **my** tracked data between **my** phone and computer. **Cons:** None.	**Pros:** • The timer helps **you** say "no" to **your** incoming messages. • It allows **you** to get **your** work done but still get a break. • The ticking sound is clear, so **you** can remember when **you** should take a rest. • In addition, it can sync **your** tracked data between **your** phone and computer. **Cons:** None.
Negative Low Two-Sided	1	**Pros:** • This app helps **me** focus on **my** work **Cons:** • It's *disappointing* that **I** *cannot* observe how **I** have been doing to meet goals each week.	**Pros:** • This app helps **you** focus on **your** work. **Cons:** • It's *disappointing* that **you** *cannot* observe how **you** have been doing to meet goals each week.

		I/My Version	You/Your Version
		• It *doesn't* keep the number of sessions **I** have accomplished or categorize **my** tasks. • It's *not* easy to organize **my** own time because **I** *cannot* customize the timer.	• It *doesn't* keep the number of sessions **you** have accomplished or categorize **your** tasks. • It's *not* easy to organize **your** own time because **you** *cannot* customize the timer.
	2	**Pros:** • The timer helps **me** say "no" to **my** incoming messages. **Cons:** • It allows **me** to get **my** work done but get *no* break. • The ticking sound is *unclear*, so **I** *cannot* remember when **I** should take a rest. • It *cannot* sync **my** tracked data between **my** phone and computer.	**Pros:** • The timer helps **you** say "no" to **your** incoming messages. **Cons:** • It allows **you** to get **your** work done but get *no* break. • The ticking sound is *unclear*, so **you** *cannot* remember when **you** should take a rest. • It *cannot* sync **your** tracked data between **your** phone and computer.
Positive Low Two-Sided	1	**Pros:** • This app helps **me** focus on **my** work • It's great that **I** can observe how **I** have been doing to meet goals each week. • It keeps the number of sessions **I** have accomplished and categorizes **my** tasks. **Cons:** • It's *not* easy to organize **my** own time because **I** *cannot* customize the timer.	**Pros:** • This app helps **you** focus on **your** work. • It's great that **you** can observe how **you** have been doing to meet goals each week. • It keeps the number of sessions **you** have accomplished and categorizes **your** tasks. **Cons:** • It's *not* easy to organize **your** own time because **you** *cannot* customize the timer.
	2	**Pros:** • The timer helps **me** say "no" to **my** incoming messages. • It allows **me** to get **my** work done but still get a break. • The ticking sound is clear, so **I** can remember when **I** should take a rest. **Cons:** • It *cannot* sync **my** tracked data between **my** phone and computer.	**Pros:** • The timer helps **you** say "no" to **your** incoming messages. • It allows **you** to get **your** work done but still get a break. • The ticking sound is clear, so **you** can remember when **you** should take a rest. **Cons:** • It *cannot* sync **your** tracked data between **your** phone and computer.
High Two-Sided	1	**Pros:** • This app helps **me** focus on **my** work • It's great that **I** can observe how **I** have been doing to meet goals each week. **Cons:** • It *doesn't* keep the number of sessions **I** have accomplished or categorize **my** tasks. • It's *not* easy to organize **my** own time because **I** *cannot* customize the timer.	**Pros:** • This app helps **you** focus on **your** work. • It's great that **you** can observe how **you** have been doing to meet goals each week. **Cons:** • It *doesn't* keep the number of sessions **you** have accomplished or categorize **your** tasks. • It's *not* easy to organize **your** own time because **you** *cannot* customize the timer.
	2	**Pros:** • The timer helps **me** say "no" to **my** incoming messages. • It allows **me** to get **my** work done but still get a break. **Cons:** • The ticking sound is *unclear*, so **I** *cannot* remember when **I** should take a rest. • It *cannot* sync **my** tracked data between **my** phone and computer.	**Pros:** • The timer helps **you** say "no" to **your** incoming messages. • It allows **you** to get **your** work done but still get a break. **Cons:** • The ticking sound is *unclear*, so **you** *cannot* remember when **you** should take a rest. • It *cannot* sync **your** tracked data between **your** phone and computer.

Notes: emphases and italics added for illustration purpose only (i.e., not shown to participants).

Procedure and Measures

202 respondents from Amazon MTurk participated in this study with compensation. Each participant was randomly assigned into one of the five conditions. The cover story and procedure in this study were similar to Study 2. After reading each review, we asked participants to report their perceptions of the reviewer's politeness using three items adapted from Chen and Lurie (2013) and Bargh et al. (1996), perceived psychological closeness with the reviewer using four items adapted from Gino and Galinsky (2012), perceived interpersonal closeness with the reviewer using an item adapted from Aron et al. (1992), and perceived reviewer's altruism using four items adapted from Price et al. (1995). In addition, we asked participants to evaluate review comprehensiveness using three items adapted from Yang et al. (2005). As a manipulation check, participants also rated the level of other-focus in the review and the level of review two-sidedness using the same items as in Study 2, and the review valence using three items adapted from MacKenzie and Lutz (1989). See Appendix C for all the measures.

Results

We first conducted a manipulation check of reviewers' attentional focus, review two-sidedness, and review valence. ANCOVA results revealed that perceived other-focus in the self-focused condition was significantly lower than that in the other-focused condition ($M = 4.13$ vs. 6.77, $F(1, 196) = 130.76$, $p < 0.001$). Results also showed that perceived review two-sidedness in the one-sided, low two-sided, and high two-sided conditions followed the expected pattern ($M = 4.12$ vs. 5.35 vs. 6.08, $F(1, 196) = 18.14$, $p < 0.001$). In addition, perceived review valence in the negative, neutral, and positive conditions also followed the expected pattern ($M = 4.74$ vs. 6.09 vs. 7.22, $F(1, 196) = 83.63$, $p < 0.001$). Therefore, our manipulations of all three variables were successful.

We then used ANCOVA to examine the effect of other-focus on perceived politeness, perceived psychological closeness, and perceived interpersonal closeness. In a series of ANCOVAs, we entered each of these variables as the dependent variable, other-focus as a within-subjects factor, the level of review two-sidedness, and the level of review valence as between-subjects factors, and treatment order as a covariate. Results revealed that the effect of other-focus on perceived politeness, perceived

psychological closeness, and perceived interpersonal closeness did not reach significance (politeness: $M =$ 6.88 vs. 6.90, $F(1, 196) = 0.03$, $p = 0.870$; psychological closeness: $M = 5.39$ vs. 5.43, $F(1, 196) = 0.59$, $p = 0.442$; interpersonal closeness: $M = 3.52$ vs. 3.49, $F(1, 196) = 0.22$, $p = 0.640$). Thus, these results suggest that perceived politeness, perceived psychological closeness, and perceived interpersonal closeness are not likely to mediate the effect of personal pronouns on review helpfulness.

On the other hand, an explanation based on perceived altruism could not be ruled out, as a reviewer's other-focus had a positive effect on perceived altruism ($M = 6.35$ vs. 6.54, $F(1, 196) = 6.67$, $p = 0.011$). However, given that empathic feelings boost one's motivation to help others (e.g., Batson et al. 1991; Batson et al. 1997), this result does not necessarily conflict with our empathy-based arguments, to the extent that higher perceived empathic concern is associated with a heightened sense of altruism.

We conducted a similar ANCOVA to explore the effect of manipulated review two-sidedness on review comprehensiveness. Results showed that perceived review comprehensiveness did not differ significantly across the one-sided, low two-sided, and high two-sided conditions ($M = 6.00$ vs. 6.02 vs. 6.00, $F(1, 196) = 0.027$, $p = 0.948$). Hence, review two-sidedness is not confounded with review comprehensiveness.

In summary, this supplementary study provided evidence that perceived politeness, perceived psychological closeness, perceived interpersonal closeness, and review comprehensiveness are not likely to account for the effects observed in the main experiments. Although we could not rule out readers' perception of reviewer altruism as an alternative explanation, this finding aligns with our empathy-based arguments.