# The Effects of Repeating Purchase Cues and Mixed Reviews on Product Attribution

*Research-in-Progress*

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## Abstract

*Prior research has shown that negative online reviews are more valuable than positive reviews due to differences in casual attribution for positive versus negative information such that negative reviews tend to be relatively attributed more to the product (vs. reviewer) than positive reviews. We propose that the presence of repeating purchase cues, which indicates using a product for a reasonable period of time, reduces the relative extent to which positive reviews are attributed to the reviewer and mitigates the negativity bias. We also evaluate the behavior of customers when online reviews include positive and negative information at the same time, and propose that characteristics of mixed reviews are closer to negative reviews than positive reviews. An experimentation involving 74 subjects shows that causal attribution to a product is negatively related to review valence, but that this relationship is less for reviews that contain repeated purchase information.*

**Keywords:** Negativity Bias, Repeating Purchase Cue, Mixed Reviews, Causal Attribution

## Introduction

Online product reviews are one of the most important sources of information for customers (Chevalier and Mayzlin 2003). In online shopping, people highly trust electronic word of mouth (eWOM), and about 70% of customers use online reviews before making a purchase decision (Jiang and Wang 2008). Prior research has also shown the importance of online consumer reviews on sellers' performance (Chevalier and Mayzlin 2003, Godes and Mayzlin 2004, Liu 2006) as well as customers' intention to purchase products (Ba and Pavlou 2002, Houser and Wooders 2006). Review valence is a factor that affects a potential customer's purchase behavior (Lee et al. 2008, Park et al. 2011, Qiu et al. 2012), but not all reviews have a similar value to customers. Although positive reviews about products are more common than negative reviews (Fowler and Avila 2009), potential customers trust negative reviews more during the online purchase process (Basuroy et al. 2003, Chevalier and Mayzlin 2003).

Negativity bias is the dominant theory that explains why negative reviews provide more value to potential customers (Baumeister et al. 2001, Rozin and Royzman 2001). Although several scholars have worked on this theory, studies explaining the moderators, which can increase the value of positive reviews, are limited. One of the most recent studies in this area indicates that the presence of words and phrases indicating temporal proximity between product consumption and review writing, which has been referred to as temporal contiguity cues, can moderate negativity bias and increase the perceived value of positive reviews (Chen and Lurie 2013).

Along this line of research, we first propose that the presence of cues showing a repeating purchase, which we refer to as a sign of multiple observation/purchase over time, mitigates negativity bias by increasing the perceived value of positive reviews. We define perceived value as the perceived helpfulness of information provided by online reviews for learning or making a purchase decision (Weiss et al. 2008). Because receivers of information may have more reason to attribute positive (vs. negative) WOM to factors other than the product experience (Mizerski 1982), we propose that the presence of repeating purchase information may mitigate the effect of negativity bias by reducing the extent to which customers attribute positive WOM to the reviewer rather than the product experience.

Customer loyalty and attribution theory are two theories that helped us to select the repeating purchase cue as an important moderator to change the effects of negativity bias. Customer loyalty expresses an intended behavior related to the service or the company (Andreassen and Lindestad 1998; Xu et al. 2009, 2011). Continuing to purchase from a company, increasing business with it in the future, and providing positive word of mouth are key indicators of customer loyalty (Andreassen and Lindestad 1998, Selnes and Hansen 2001, Zeithaml et al. 1996). Also, according to the inference rule postulated by attribution theory, multiple observations of the same cause-effect couplet over time help customers to attribute more to products more than to the advertiser (Hansen and Scott 1976).

In the same way that multiple observation over time leads to the inference of causality for physical events (Hansen and Scott 1976), phrases in online reviews that indicate multiple/continuous product experience over time should strengthen reader attributions that the product experience is the main cause of a review. However, this effect should be more significant for positive than for negative reviews since there might be few reasons other than the product experience to communicate negative information (Mizerski 1982). In other words, the presence of repeating purchase cues may mitigate negativity bias by changing reader beliefs about the cause of positive reviews.

A closer look at online reviews from well-known websites such as Google Shopping, Amazon.com, eBay.com, etc. shows that many reviews are a combination of pros and cons. Although the focus of most studies is on review valence as being positive or negative, limited studies have been done on the effect of mixed reviews that contain positive and negative information about a product on causal attribution and perceived values, particularly those with repeating purchase cues. Due to the frequency of these types of reviews at online sellers' websites, we will examine the behavior of potential customers when reading a group of reviews, including purely negative, purely positive, and mixed feedback. Results of this study can help marketers understand the physics of mixed reviews vs. positive or negative ones.

In summary, this article provides multiple contributions. First, we will introduce repetitive purchase cues as another important and unexplored factor moderating the effect of negativity bias. We show that even in an environment in which negative information is less frequent and more diagnostic, repeating purchase cues reduce the effects of negative bias. We then look at the third type of valence in online reviews, which is called mixed valence in this study, due to the inclusion of both positive and negative information about a product. In existing studies in this area, scholars have mainly focused on review valence being positive or negative, and several insights have been provided. However, based on the theory of negativity dominance as well as the accepted theory of J-shaped distribution of online reviews, the third type of valence should be investigated as well. We will show that a mixed review can reduce the attribution that reviewers tend to brag about themselves in the case of a purely positive review. Finally, the effect of a repeating purchase will be investigated not only on purely positive and negative reviews, but also on mixed reviews, which simultaneously provide positive and negative information.

# Theoretical Background and Hypotheses Development

## *Negativity Bias and Attribution*

Negativity bias is defined as valuing negative information more than positive information (Baumeister et al. 2001, Rozin and Royzman 2001). The applicability of negativity bias in different contexts has been studied well: positive traits are less weighted compared to negative traits (Fiske 1980), positive product attributes are perceived as less diagnostic of product quality (Herr et al. 1991, Mizerski 1982, Wright 1974), and positive online reviews have less value compared to negative reviews at the moment of purchase (Chevalier and Mayzlin 2003).

Some theoretical background which may be used to explain the negativity bias phenomenon are as follows: expectancy-contrast theory, frequency-weight theory and range theory (Skowronski and Carlston 1989). In expectancy-contrast theory, the effect of each event is based on the subject's expectation level, and the negativity biases are due to contrast effects in judgment. A contrast effect occurs when a stimulus is expected to be more extreme than it would be otherwise as a result of comparison with some internal standards or references (Skowronski and Carlston 1989). In frequency-weight theory, one of the major factors influencing the effectiveness of an event would be its discrepancy from expectancy. In other words, unexpected cues are perceived to be more informative compared to more frequent events (Skowronski and Carlston 1989, Kanouse and Hanson 1972, Chen and Lurie 2013). The range theory introduces important factors to model impression formation processes by emphasizing the range of possible judgments implied by individual cues (Skowronski and Carlston 1989). Attribution theory (Jones et al. 1963, Kanouse and Hanson 1972) suggests that relatively rarer events are more influential. As a result, since negative reviews are relatively less frequent, they are more influential.

Frequency-weight theory can explain negativity bias in online markets (Skowronski and Carlston 1989), whereby negative information is attributed more to the fundamental stimulus, which is the target product and therefore more persuasive because social norms make negative information less prevalent. Specifically, social norms and tendency toward social competence lead people to provide more positive information about products (Kanous and Hanson 1972, Mizerski 1982).

## *Review Valence: Mixed Reviews*

Review valence and its effect on sellers' profit and sales or customers' purchase decision and intention has been well-studied (Chevalier and Mazlin 2003; Chen and Xie 2008; Park et al. 2011; Lee et al. 2008; Cui et al. 2012; Qiu et al. 2012). The focus of all these studies has been on either positive or negative reviews. However, potential buyers read a combination of positive and negative reviews before making a decision (Park et al. 2011). In this study, we are evaluating the effect of mixed reviews on a potential buyer's purchase decision.

We employ the negativity dominance phenomenon, supported by frequency-weight theories, to theoretically study the effect of mixed reviews on purchase decisions. According to the principles of negativity dominance, the overall perception and evaluation of a combination of positive and negative information (or events, individuals, personality traits, etc.) is more negative than the algebraic summation of the subjective values of those entities (Baumeister et al. 2001, Rozin and Royzman 2001). The overall appraisal of individual entities is the stimuli not the algebraic sum of them; therefore, negativity dominance occurs after considering any potential effect of negative potency and is, in principle, independent of the negative phenomenon by itself. Negativity dominance is considered the most robust and most common exemplification of negativity bias. In the case of purely positive and purely negative events, negativity dominance holds that the combination of events of equal but opposite subjective valence (positive and negative) will be negative (Rozin and Royzman, 2001).

According to Jones's attribution theory, negative reviews are more attributed to fundamental stimuli, which are a product experience (Kanouse and Hanson 1972, Gilbert and Malone 1995). Mixed reviews are perceived to be more negative than positive, according to negativity bias (Skowronski and Carlston 1989). As a result, we hypothesize the following:

*H1: Mixed reviews, which express both positive and negative opinions, are attributed more to product experience than positive reviews.*

Reviews have different values for different customers. Customers try to understand reviewers' reasons behind sharing opinions and then provide judgment about the value of reviews based on their understanding (Friestad and Wright 1994). In the evaluation of persuasive communication, consumers assess if reviews are attributed to reviewers or product experience (Folkes 1988). For example, a consumer could attribute a positive review to either the product being satisfactory or the tendency of a reviewer to be positive (Mizerski 1982). Customers agree that reviews attributed to product experience are more informative and persuasive than reviews attributed to professional review writers (Chen and Lurie 2013).

Online purchasing is a voluntary task, meaning that typically, people are free to select a product among all alternatives based on their preferences. As a result, after making a final decision, consumers try to show others their abilities to select the most appropriate product by writing positive reviews. In other words, positive reviews help reviewers appear more successful in the decision-making process (Angelis et al. 2012, Wojnicki and Godes 2011). According to this argument, people might have more personal reasons to provide positive rather than negative reviews about a sample product (Epley et al. 2004; Nickerson 1999). Thus, positive reviews are attributed more to the review writer (vs. the product experience) than negative WOM. It has also been accepted that WOM values decrease as they become attributed more to non-product causes (Mizerski 1982), since potential customers would like to obtain more information about the product and not the reviewer at the point of purchase. By combining these two arguments, we propose the following:

*H2: The more a customer attributes consumer reviews to product* experience*, the greater the perceived value of consumer reviewers.*

## *Repeating Purchase and Causal Attributions*

According to the psychological literature, although attribution theories can be separated into different paradigms, all are concerned with how an individual ascribes or attributes property X to object Y (Settle and Golden 1974, Hansen and Scott 1976). In other words, all developed paradigms in attribution theory focus on how individual attributes (e.g., reaction to a product, behavior of another person, or one's own behavior) affect the perceived intrinsic or dispositional properties of the stimulus (product, other person, or oneself) or to variable conditions in the context or situation (Hansen and Scott 1976).

Settle and Golden (1974) have stated that an advertising message can be attributed either to the characteristics of the product or to the advertiser's desire to sell the product. They have also theorized that the audience of an advertisement would be more confident or certain of the advertiser's claim about the product if the advertiser's claim remains consistent over time, in different situations, and to different people. In other words, in the presence of multiple observations over time, advertisement will be attributed to the product, not the sellers.

In our research, WOM is the advertisement media, and multiple observations in advertisement is the same as repeating purchase cues in online reviews. Therefore, by adapting Settle and Golden's theory into our context, their initial statement will change to saying that an online review can be attributed to either the characteristics of the product or the review writer's desire to look positive, which is consistent with other scholars' understandings (Mizerski 1982, Chen and Lurie 2013). Thus, a potential customer would be more confident or certain of the review writer's claim about the product if the writer expresses consistent use of the target product over time.

*H3: Online reviews, which consist of repeating purchase cues, are more attributed to the product compared to reviews repeating purchase statements.*

Social competence (not actual product experience) is one of the main reasons behind positive reviews; thus, less value would be perceived by a potential customer by reading positive reviews (Mizerski 1982). In contrast, we theorize that in the presence of information about a repeating purchase cues related to duration of use, there should less social competence reason connected to the product properties. Therefore, in the presence of the repeating purchase cues, attributions of reviews to the product experience are stronger for positive rather than negative/mixed reviews (Chen and Lurie 2013).

According to the relationship between multiple observations and causal attribution proposed by Hansen and Carol (1976) in marketing domain, when an advertise provides consistent information about a target product overtime and in different situations, the perceived credibility of the message and trustworthiness of the advertiser would increase and as a result a potential buyer would attribute the message to the target product and not advertiser. By adopting Hansen and Carol's findings to our study, we hypothesize that the presence of repeating purchase cues will causally connect the product experience to the review, facilitating perceptions that the review is driven by the product experience. According to negativity bias, readers are more likely to attribute positive reviews to the reviewer in the absence of repeating purchase cues; therefore, the presence of repeating purchase cues can help a customer attribute a positive review to the product experience to a greater extent than a negative/mixed review. This discussion is used to develop the following hypothesis:

*H4: The presence of repeating purchase cues increases the attributions of positive reviews to the product experience to a greater extent than mixed reviews.*

Figure 1 illustrates this theoretical model, which includes all three hypotheses.



**Figure 1. Relationship between Valence, Attribution, Value and Repeating Purchase Cues**
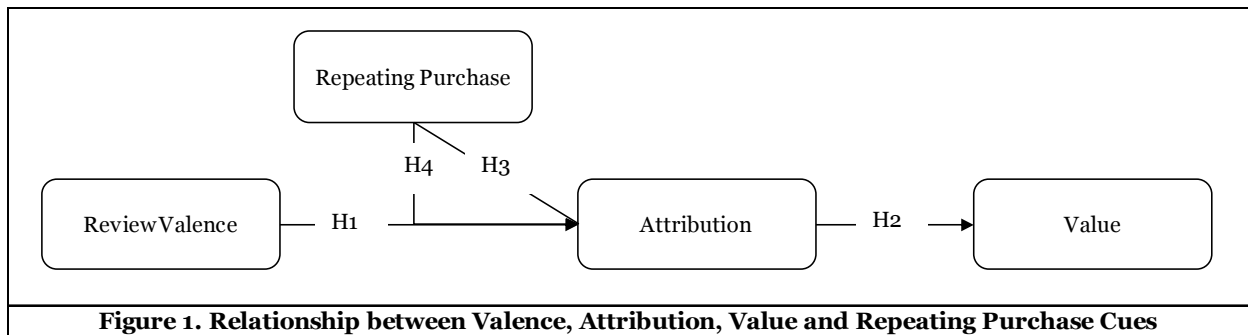
# Research Model

## Study Setting

To test the proposed hypotheses, we planned to employ a 2*3 factorial design: (repeating purchase: present vs. absent)*(review valence: mixed, negative and positive). However, at this point, due to lack of sufficient subjects for negative valence in our experimentation warrants, we adopted a 2*2 design: (repeating purchase: present vs. absent)*(review valence: mixed and positive).

We provided all subjects with five reviews about four pencil attributes[1]: ease of use, eraser, refillability, and grip handling (Park et al. 2011). To select the most appropriate product attributes for this study, 48 reviews with 1 to 5 star ratings were randomly selected from Amazon.com and Google Shopping. Then, based on the relative frequency of the discussed attributes in those reviews, we selected the four identified attributes. Prior to this study, subjects were informed that they would receive a 1% extra point of the final grade as a reward for participation. In addition, as in many other experimental studies (e.g., Xu et al. 2012), we offered one $50 Best Buy gift card through a drawing. To ensure that the results of this study were reliable and could be generalized, we ensured that reviews follow the J-distribution (Aral 2014). A website builder was utilized to design 6 different websites for 2*3 design, each containing five reviews. However, for this research in progress we only used four groups.

## Manipulation and Measurements

We adopted measures for review valence, repeating purchase cues, causal attribution to products, and perceived value from scales that had been validated in prior studies.

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[1] These four attributes were selected after reading 50 online reviews in Amazon.com and Google Shopping.

Review valence was manipulated based on the average star ratings (five-point scale) of the five reviews provided, where 5 and 4 indicated a very positive experience, and 1 and 2 indicated a negative experience, and 3 were labeled as mixed reviews (Chen and Lurie 2013). As a manipulation check, we asked participants to assess the review valences on a nine-point scale, with 9 being extremely positive and 1 being extremely negative (Chen and Lurie 2013). Results of this manipulation check validated our initial designed valences for positive and mixed reviews as the two main levels in this research in progress. Appendix 1 shows the manipulation results in detail.

To manipulate the repeating purchase cues, all reviews were designed in a manner such that only one-half of the reviews contained repeating purchase cues with words such as "again," "several times," "repetitive purchase" "during last few years," etc. In addition, a modified measure was employed from the work of Chen and Lurie (2013) for purposes of checking manipulation. Results of the manipulation checks indicate that subjects were able to distinguish reviews with repeating purchase cues from reviews without repeating purchase statements (p<0.05). Appendix 2 shows the manipulation check results. To measure values, a nine-point scale created by Sen and Lerman (2007) was used, where 9 shows valuable reviews and 1 shows reviews with no value. Finally, we assessed causal attribution using a measure adapted by Frank and Golvich (1989). We measured product experience attribution by asking subjects to indicate how large a role the product-using experience played in the decision to write the review using a nine-point scale, with 9 indicating a large role of product experience and 1 indicating a small role of product experience.

The primary independent variables of designed valence and repeating purchase measures were used in all corresponding analyses. However, we measured the perceived value and causal attribution to products that are intermediate or ultimately dependent variables.

### *Data Analysis*

We recruited 74 student subjects from three colleges and ten majors at a public university, representing diverse backgrounds. The number of recruited subjects is enough to conduct a 2*2 study to compare the effect of mixed reviews vs. positive reviews. We are planning to recruit more subjects to ensure sufficient power for a complete 2*3 factorial study. The number of total subjects should be 108 to ensure a statistical power of 0.8 for a medium-size effect, i.e., 18 subjects for 6 groups (Cohen, 1992).

Among the 74 subjects, 62 were males and 12 were females. All were students: 4 graduate students and the rest undergraduate. The average age was 24.2. The subjects were fairly familiar with online shopping (5.4/7).

## Analysis of Results

To examine the first hypothesis, we employed a contrast analysis. Due to the potential effect of the repeating purchase cues, we selected subjects who were exposed to designed mixed and positive reviews with no repeating purchase cues. Appendix 3 shows the measured causal attribution to product means and standard deviations for the two groups that were examined in H1. Based on the results of the contrast analysis model, mixed reviews are being attributed more to product experience than to positive reviews (t-value: −0.2.010, p-value: 0.05).

| Table 1. Regression Model for H2 | | | | | |
|---|---|---|---|---|---|
| Model | Unstandardized Coefficients | | Standardized Coefficients | t-value | p-value |
| | Beta | Std. Error | Beta | | |
| 1 (Constant) | 4.573 | .996 | | 4.593 | .000 |
| Causal Attribution Product Experience | .251 | .125 | .200 | 2.013 | .047 |
| Dependent Variable: Perceived Value | | | | | |

To examine the effect of casual attribution to the product on overall perceived value by a potential customer, as proposed in hypothesis H2, we deployed a linear regression model. Based on this model and the results presented in Table 1, the regression coefficient for attribution to the product is positive

(0.200), with a t-value of 2.013 and a p-value of 0.047. Thus, when reviews are attributed more to products, the overall perceived value increases, thus supporting hypothesis H2.

The next hypothesis, H3, explains the relationship between presence of repeating purchase cues and attribution to product. The employed linear regression model to study this hypothesis shows a positive relationship between presence of repeating purchase cues and causal attribution to product, with a positive coefficient of 0.182 and p-value of 0.009. Hypothesis 4 was examined by employing a univariate ANOVA model. In this model, the moderating effect of repeating purchase cues was studied when two types of valence—mixed and positive—are present. Figures 2 shows the results of the univariate ANOVA analysis on H4. The p value of this model is equal to 0.021 with a t-value of 5.549.



**Figure 2. Estimated Marginal Means Causal Attribution to Product Experience (Positive and Mixed Reviews)**
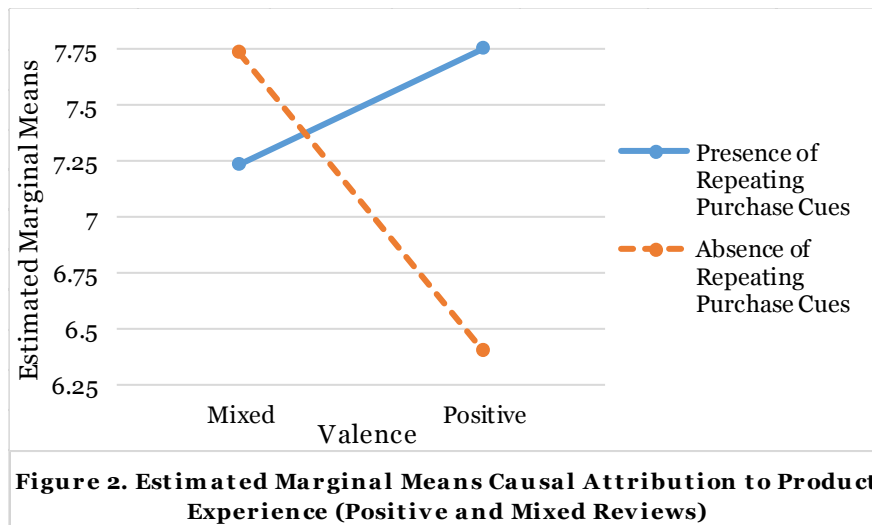
## Discussion

This research shows that a group of mixed reviews consisting of both positive and negative opinions about a product are more similar to negative than positive reviews. The negativity bias phenomenon supported by frequency-weight theories, which emphasizes the power of negative arguments vs. positive arguments in convincing people, supports the findings of hypothesis H1 (Fiske 1980, Skowronski and Carlston 1989). According to these theories, negative events are more influencing than positive events due to the rarer occurrence in online markets. Negativity bias has been examined in the case of purely positive vs. purely negative reviews. However, it has been accepted that online reviews follow a J-shaped distribution. A good portion of online reviews are a mixture of positive and negative information about a product, and potential buyers read an average of five reviews before making a purchase decision (Park et al. 2011). Therefore, it is important to assess customers' behavior in the presence of mixed reviews.

We have also validated hypothesis 2, which proposes a positive connection between attribution to product experience and perceived value. As Chen and Lurie (2013) proposed, when a customer captures more information about a product by reading reviews, the perceived value will be higher. Our findings are consistent with this argument as well.

In H3, we examined the effect of repeating purchase cues in review contents on the level of attribution to the product. Results of this study are consistent with Settle and Golden's proposition in terms of the positive relationship between attribution to a product and consistency of the delivered advertisement over time (Settle and Golden 1974).

This research also shows that repeating purchase cues mitigate negativity bias in online reviews, which is proposed in H4. Repeating purchase cues increase the extent to which potential customers attribute positive reviews to the product experience. In the presence of repeating purchase cues, customers are more likely to attribute positive reviews to the product experience than mixed reviews. By making a

connection between reviews and product experience, consumers perceive more value by reading positive reviews. In other words, repeating purchase cues reduce negativity bias by shifting consumers' beliefs about the cause of positive reviews.

## Conclusion and Contributions

This study makes several theoretical and practical contributions. First, we propose an application for negativity dominance backed up by frequency-weight theories in online WOM. To the best of our knowledge, prior work is based on either positive or negative reviews. We have found that not only are negative reviews more influential than positive reviews, mixed reviews are also perceived to be more negative than positive and acts similarly to a negative review. It has been discussed that marketers analyze the available reviews and release the most appropriate combination of positive and negative reviews to influence the potential buyers' purchase decisions (Chen and Xie 2008). The application of this theoretical finding will help online sellers to group the reviews and release an appropriate combination of not only purely positive and purely negative but also mixed reviews. Also, knowing the effect of mixed reviews is extremely important since it is fact that potential buyers usually look at more than one review, and the likelihood of reading purely negative or positive reviews is low (Park et al. 2011).

Second, despite early suggestions that repeating purchase cues matter to human behavior (Weiss et al. 2008), little research has been done on this idea. The research here shows that repeating purchase cues affects causal attribution in social as well as physical domains. Although repeating purchase cues are a small portion of online reviews, their effect on the decision-making process is significant. Marketers who are worried about the intensive impact of negative or mixed reviews can benefit from the findings of this work. Business owners can respond to negative reviews optimistically by reducing their impact, but such maneuvers may exacerbate the situation (Wehrum 2009). However, with knowledge that repeating purchase cues increase the usefulness of positive reviews to a greater extent than mixed reviews, marketers can encourage consumers to talk about their experiences if they are using a product for a considerable period of time.

Finally, this work helps to understand customers' behavior better in the presence of repeating purchase cues as a moderating factor. Although research has shown that word-of-mouth affects firm and product performance (Godes and Mayzlin 2004, Tirunillai and Tellis 2012), little work has been done to understand why certain types of WOM communication carry more impact than others. This article adds to recent work exploring the psychological foundations of WOM communication such as causal attribution (Berger and Schwartz 2011, Cheema and Kaikati 2010) by examining how customers assess a review value in the presence of moderating cues like repeating purchase.

## Limitations and Directions for Future Research

Although our approach is consistent with prior research exploring the effect of temporal contiguity of causal attribution (Chen and Lurie 2013), we have not conducted our study on available online reviews of sellers' websites. Our findings are based on an experimental laboratory condition. Therefore, it may be beneficial to collect data from websites such as Yelp to validate observations reported in this paper. Based on the limited data we have collected thus far, the effect of negative reviews comparing positive and mixed reviews cannot be examined. In other words, some groups in our factorial design need more data points. The parsimony of our proposed model in some relationships suggests that additional variables might help to explain key variables and moderate the strength of relationships within the model. For example, product type (experience vs. search) and product knowledge might also moderate the impact of the review valence on causal attribution. In addition, we selected an inexpensive product, which imposes a low risk to customers and at the same time, our subjects are familiar with pencil and can easily capture reviews value. Customer behavior may be different if a more expensive product is selected. Further research is necessary to test the model with different types of products in different price ranges to ascertain the effect of product value as well as product type.

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# Appendix

| Appendix 1. Manipulation Check Results for Review Valence | | |
|---|---|---|
| Designed Valence | Mean of Perceived Valence by Subjects | Standard Deviation |
| Positive | 7.03 | 2.25 |
| Mixed | 6.14 | 2.25 |

| Appendix 2. Manipulation Check Results for Repeating Purchase Cues | | |
|---|---|---|
| Designed Repeating Purchase | Mean of Perceived Repeating Purchase Cues by Subjects | Standard Deviation |
| Presence of Cues | 7.24 | 2.33 |
| Absence of Cues | 6.43 | 2.35 |

| Appendix 3. Descriptive Statistics for Hypothesis H1 | | | |
|---|---|---|---|
| | Valence | Mean | Standard Deviation |
| Causal Attribution to Product Experience | Positive | 6.41 | 1.80 |
| | Mixed | 7.66 | 1.01 |