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RESEARCH PAPER

Helpfulness of Online Review Content: The Moderating Effects of Temporal and Social Cues

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Abstract

This study advances our understanding of consumer evaluation of search product review content, which can vary in its concreteness, by considering contextual review cues that are often tagged to product review content. Anchoring on construal level theory, we differentiate two forms of contextual review cue—namely, temporal cue (i.e., when the review was posted) and social cue (i.e., who posted the review)—and posit their individual and joint moderation effects on the relationship between product review content and perceived review helpfulness. The experimental results reveal interesting insights. First, when the temporal cue indicates near distance, concrete product review content is perceived as more helpful. By contrast, abstract review content is perceived as more helpful when the temporal cue is distant. Second, social cues are non-instrumental in affecting the evaluation of concrete product review content; however, near social cues have bearings on the evaluation of abstract product review content. Third, we also find a significant joint effect of temporal and social cues on the relationship between product review concreteness and review helpfulness. The assessment of abstract reviews' helpfulness is strengthened when both social and temporal cues reveal near psychological distance. This research contributes not only to the product review literature by providing integrated understanding of product review (i.e., considering both content and contextual cues), but also to construal level theory by identifying the moderating consequences of temporal and social cues as rooted in two dimensions of psychological distance.

Keywords: Product Review, Construal Level Theory, Helpfulness, Temporal Cue, Social Cue

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1 Introduction

Identifying helpful product reviews available within the voluminous body of review information is an important matter that online commerce platforms need to address. The benefits of doing so are substantial. It is estimated that Amazon stands to gain an additional 2.7 billion dollars by inserting the question: "Was this review helpful to you?" (Spool, 2009) next to product review information. Academic researchers have advocated the benefits of helpful reviews and identified traits of helpful product review

content (e.g., Kim & Gupta, 2012; Mudambi & Schuff 2010; Zhu & Zhang, 2010). Although these studies have yielded a rich understanding of the problem, most have focused on investigating the relationship between product review content and review helpfulness (Ghose & Ipeiritis, 2010), while largely neglecting the potential effect of the contextual cues.

These contextual cues are pieces of information that are not explicitly contained in product review content, but constitute a part of the product review information as a whole (Charness & Gneezy, 2008; Hu, Liu & Zhang, 2008). Contextual review cues, such as

information about reviewers and the timestamps of posts, are often provided along with review content (e.g., on amazon.com). Considering contextual review cues is crucial to evaluating review helpfulness because review helpfulness is not solely based on the explicit content of the review, Li, Huang, Tan & Wei (2013), through a thorough review of the extant product review literature, echo the need to consider both product review content and contextual review cues. Such a viewpoint is supported by behavioral theories. For instance, dual process theory has demonstrated that a consumer's judgment or decision-making is generally significantly influenced by both information content and contextual information cues (e.g., Chaiken & Maheswaran, 1994; Ho & Bodoff, 2014); in special cases, contextual information cues play an instrumental role as an independent determinant.

Although the great impact of contextual cues of reviews has been recognized (e.g., Forman, Ghose, & Wiesenfeld, 2008; Ghose & Ipeirotis, 2010), the underlying effect concerning how they influence the relationship between product review content and a consumer's evaluation of helpfulness remains largely unexplored. This study seeks to fill this gap. We do so by anchoring on construal level theory, which posits that an individual's evaluation or assessment of an object or event is influenced by his/her psychological distance through the construction of mental construal (Lieberman & Trope, 2008; Trope & Liberman, 2010; Trope, Liberman & Wakslak, 2007). For instance, a product review of a laptop computer that was written a year ago might trigger a mental construal that differs from one triggered by another review of the same product written a few days ago. Based on construal level theory while reflecting on commercial implementations employed by companies like Amazon, for example, we theorize and empirically test how two contextual cues—namely temporal cues (i.e., “when the review was posted” as drawn from temporal distance in construal level theory) and social cues (i.e., “who posted the review” as inferred from social distance in construal level theory)—interact with the nature of search product review content (i.e., concreteness) to have a joint effect on the perceived helpfulness of product reviews. We considered only the search product (i.e., the laptop computer used in the experiment) and corresponding product reviews, not only because the findings have wider generalizability to numerous online shopping websites that sell laptop computers (e.g., amazon.com, Yahoo! Shopping), but also because the research would thus be aligned with the stream of product review research that looks at search product reviews (Pan & Zhang, 2011). Our research model is empirically validated by a set of data collected from laboratory experiments.

The current research affords several theoretical contributions. In terms of the product review

literature, this study advocates and empirically demonstrates the importance of considering the contextual cues in product review evaluation. We empirically demonstrate how helpfulness judgments of product review content vary depending on specific contextual cues (i.e., temporal and/or social cues). This research extends construal level theory, which is currently dominated by empirical studies that largely examine the two measures of psychological distance in isolation (Kyung, Menon & Trope, 2014; Trope et al., 2007). While the research recognizes that both temporal and social distances affect people's construal level (Soderberg, Callahan, Kochersberger, Amit, & Ledgerwood, 2015), little research has investigated whether these two types of distance, as dimensional reflections of psychological distance taken as a whole, have a similar effect, see Liberman, Trope & Wakslak (2007); Trope & Liberman (2010), and there is even less discussion of their possible joint effects. Our study advances understanding, and further extends construal level theory by providing granular understanding of temporal and social distance—two important aspects of psychological distance. By doing so, our findings provide instrumental suggestions on how websites could strategically include contextual review cues when presenting product reviews.

This paper is organized as follows: Section 2 assesses the extant product review literature and discusses the theoretical underpinning of construal level theory; Section 3 presents the research model and hypotheses; Section 4 documents the setup of the experiment and the results; Section 5 discusses the theoretical and practical contributions, limitations, and future directions.

2 Theoretical Background

2.1 Product Review

Product reviews influence consumers' purchase decisions (Dellarocas, 2003). Two streams of study are prominent in the literature in relation to the discussions of reviews, where the first stream of research examines the direct effects of overall review-related information, such as review ratings (also referred to as “review valence”) or the quantity of reviews (i.e., review volume), on sales. The findings of such studies are mixed. For example, some scholars find that it is product review volume, rather than valence, that significantly influences sales and revenue in the movie industry (Duan, Gu, & Whinston, 2008; Liu, 2006). Others find that review valence is a critical factor that affects product sales (Chevalier & Mayzlin, 2006). These inconsistent findings highlight the intricacy of product reviews and indicate that research needs to go beyond review valence to investigate the influences of other aspects

of product review information (Cui, Lui, & Guo, 2012; Zhu & Zhang, 2010).

The second stream of research takes a contingency perspective and investigates how consumers' characteristics moderate the relationship between product review content and perceived review helpfulness. The type of product a consumer is interested in, consumers' regulatory focus, and learning behavior are found to be important contingent factors through which product reviews exert influence on consumers (e.g., Chen & Xie, 2008; Li et al. 2013; Yin, Bond, & Zhang, 2014; Zhang et al. 2010). For example, Pan, & Zhang (2011) found that product type, experiential or utilitarian in nature, can moderate the positive effect of review valence and length on product sales. Similar findings were reported by Huang, Tan, Ke & Wei (2013) and Brown, Barry, Dacin, & Gunst (2005), which echo the contingency effect of product review content on consumers' perception of the helpfulness of reviews. Also, Zhang, Craciun, & Shin (2010) found that a consumer's regulatory focus (i.e., promotion versus prevention) can determine whether negative or positive product reviews are more helpful, while Chen, Wang, & Xie (2011) indicated that consumers' observational learning affects the perceived helpfulness of reviews. In addition, Chen et al. (2008) and Hu et al. (2008) showed that disclosing reviewers' information affects consumers' evaluation of product reviews.

Despite the diverse and increasingly rich findings, these research streams share a common albeit not explicitly advocated thread: research on product review helpfulness needs to go beyond considering the effects of a single aspect of product reviews by contextual cues that may also accompany product review content. Indeed, consumers may simultaneously comprehend product review content and the contextual cues ascribed to it. Research that considers both content and contextual cues would advance our nuanced understanding of how to enhance the utility of product reviews and provide instrumental guidelines for practitioners to develop effective product review systems (Huang et al., 2013; Mudambi et al. 2010). To understand how contextual review cues influence consumer evaluation of product review content, as noted above, we draw on construal level theory.

2.2 Construal Level Theory

Consideration of contextual cues is anchored on construal level theory, which is used to explain the relationship between an individual's psychological distance from an object or event and his/her mental construal of it (Liberman & Trope, 2008; Trope & Liberman, 2003; Trope & Liberman, 2010; Trope et al., 2007). According to construal level theory, if the psychological distance between an individual and an

event/object is near, then the construal level is low; conversely, if the psychological distance between the individual and the same event/object is far, the construal level is high (Liberman & Trope, 2008; Trope & Liberman, 2003; Trope & Liberman, 2010; Trope et al., 2007).

Psychological distance is defined as an individual's perceived distance from an object or event in his/her psychological space, that is, "subjective experience that something is close [to] or far away from the self, here and now" (Trope & Liberman, 2010, p. 440). As noted in the quote, the psychological distance of something is thus gauged with respect to "self" (i.e., social distance), "here" (i.e., spatial distance), or "now" (i.e., temporal distance). We focus on the social and temporal dimensions of psychological distance, which are especially relevant to this study. Temporal distance is referred to as a temporal cue in the context of product reviews (e.g., the time elapsed between the date a review was written and the time a consumer reads it) and social distance is denoted as a social cue (e.g., how the author of the review is related socially to a consumer reading it) (Liberman, Sagristano & Trope, 2002; Liberman et al., 2007).¹

Mental construal is theorized at two different levels: high and low-level construal. A consumer with a high-level construal would describe the central features of an object or event in terms of abstract and schematic representation, while a consumer with a low-level construal would describe the same object or event in terms of concrete and contextual representation (for a summary, see Trope & Liberman, 2003, p. 405; Liberman & Trope, 2008, p. 1202). A classic example illustrating the difference between high- and low-level construal is the relationship between the forest and the tree. Other contextual examples include an observer with a low-level construal describing a sporting scene as people "playing ball," while another observer with a high-level construal describes the same scene as people "having fun." A consumer with a high-level construal might refer to a "communication device" (abstract), while another with a low-level construal would say "cellular phone" (concrete).

As mentioned above, the theory posits that greater psychological distance leads high-level mental construals while near psychological distance produces low-level mental construals (Kim, Zhang, & Li, 2008 2008). The farther the psychological distance between a consumer and an object/event, the higher the level of construal becomes. Regarding the temporal distance, the thesis is: the farther the temporal distance, the higher the level of an individual's construal. For example, when a consumer plans to purchase a personal computer immediately (versus in one year), that consumer is more likely to mentally construe his/her desire as "I want to buy a computer

with a 2 TB hard disk, 512 GB memory, etc. (versus “I want to buy a computer ranked in the top 3 in the market for personal use”)” (Forster, Fredman, & Liberman, 2004). The general thesis can also be applied to social distance, where individual form higher level construals with socially distant versus socially near entities (Liviatan, Trope, & Liberman, 2008).

Prior studies applying construal level theory to examining how psychological distance affects consumer behaviors have primarily focused on the effects of a single dimension of psychological distance (e.g., Fiedler, Jung, Wänke, & Alexopoulos, 2012; Hong & Sternthal, 2010; Luo, Andrews, Fang & Phang 2014; Lynch Jr. & Zauberman, 2007; Spassova & Lee, 2013). Given that consumers do face multiple dimensions of psychological distance simultaneously in the real world, it is important to examine how these multiple dimensions affect consumer behaviors (Zhao & Xie, 2011), but there is little theorization of the differences between distance dimensions (see Boroditsky, 2001; Boroditsky & Ramscar, 2002).

In this study, we investigate how temporal and social distance induced by reviews’ contextual cues affect consumer evaluation of online product review content. In addition, we examine the joint effects of these two dimensions of psychological distance. To this end, we complement construal level theory with (1) “Weber-Fechner Law,” proposed by Kim et al. (2008), which states that perceived psychological distance is near only when both temporal distance and social distance are near; and (2) “fit theory,” proposed by Zhao & Xie. (2011), which states that psychological distance is stronger only when temporal distance and social distance fit (i.e., near temporal distance matches near social distance, and distant temporal distance matches distant social

distance). Further theoretical development of this point is presented in Section 3.4.

3 Research Model and Hypothesis Development

Figure 1 presents the research model of this study. Product review content is conceptualized in terms of the concreteness of the details (i.e., from abstract to concrete). Product reviews’ contextual cues, both temporal and social, provide additional information about a product review regarding when it was written and who wrote it. Our thesis is that product reviews’ contextual cues, namely, temporal and social cues, play an important, yet different, moderating role in influencing the relationship between the product review content and the consumer helpfulness assessment of such reviews. Our thesis is inspired by Liberman et al. (2007), who pointed out that although construal level theory “points to similarities across the dimensions of psychological distance [social and temporal distances], there are also important differences among the dimensions.” (p. 114).

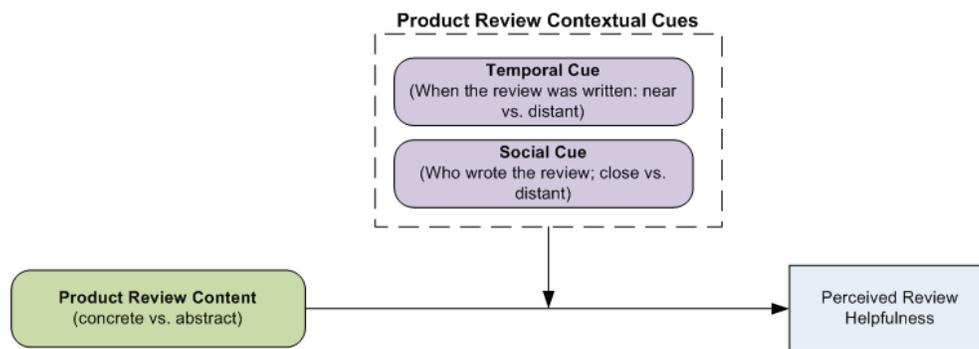


Figure 1. Research Model

Product review helpfulness refers to the assessment of whether a given product review is deemed to be useful for making purchase decisions (Mudambi et al. 2010). Product review helpfulness serves as an important perceptual measure in the investigation of product reviews (Cao, Duan, & Gan, 2011; Willemsen, Neijens, Bronner, & de Ridder, 2011; Yin, Bond, & Zhang 2014), in particular when

contextual cues are considered. For example, it has been found that the provision of social cues, such as revealing the identity of the reviewer, could heighten the perceived helpfulness of a product review (Forman et al., 2008; Hu et al., 2008).

In the rest of this section, we first present a hypothesis on the direct effect of product review

¹ Construal level theory entails two other dimensions not studied in current research. They are spatial distance and hypothetical distance. Spatial distance refers to people’s perception about the physical distance with the event that happened. Hypothetical distance refers to people’s perception about the possibility that an event happened. In this study, we only focus on the temporal distance and social distance of construal level theory because these two dimensions are tightly related to the focus of these two types of contextual cues (i.e., temporal and social cues).

content on perceived review helpfulness (H1). Then we offer hypotheses on the moderating effects of individual contextual cues (i.e., temporal [H2] and social [H3]) on the relationship between product review content and helpfulness. While we posit that both contextual cues have moderating effects, the mechanisms through which they have an individual effect on the relationship between review content and perceived review helpfulness are different, as delineated below (Sections 3.2 and 3.3). Further, we advance the theorization in this area by articulating the joint moderating effect of the two contextual cues on the relationship between product review content and perceived review helpfulness (H4).

3.1 Product Review Content

The content of a product review can be concrete or abstract. The study of product review content's concreteness is rooted in the linguistic expression literature (Fiedler, 2008; Semin & Fiedler, 1988; 1991). According to the classical linguistic category model, the concreteness of a piece of information varies depending on how an individual describes an object or event (Semin, 2008). To illustrate, a concrete expression is a *descriptive action verb* (e.g., Person A is writing), which refers to the factual description of an object or event, thus leaving little room for interpretation. An abstract expression is a *state verb* (e.g., Person A is acquiring knowledge), which can be more ambiguous (Dechêne, Stahl, Hansen & Wänke, 2010; Hansen & Wanke, 2010). Similarly, in the current research context, a concrete review would provide detailed information about the product's attributes or characteristics with specific expressions (e.g., "I like this notebook computer because it has 1 TB memory capacity, which is sufficient for me to store more than 1,000 movie files"). In contrast, an abstract review would express the reviewer's personal experiences with or feelings about a product. It lacks detailed discussion of the product's parameters or attributes (e.g., "I really cannot believe I got this. I am proud of this. I can store as many movie files as I want in this notebook computer"). As suggested by construal level theory, the notion that the concreteness of the review equates to the construal level (i.e., the more concrete the review, the lower the level of construal) (Trope & Liberman, 2010).

It has been established that the helpfulness of a review is determined by the extent to which the review provides diagnostic information (e.g., Mudambi & Schuff, 2010). The linguistic category model deduces that, compared to an abstract product review (i.e., high construal level), a concrete review (i.e., low construal level) has more objective information about the product and leaves less room for consumers to interpret and guess the meaning of its author. It enables consumers to perceive the

reviews' content as more easily recognizable and informative (Bleasdale 1987; Hansen & Wanke, 2010), and thus it is more useful for reducing consumers' perception of ambiguity in decision-making (Herr, Kardes, & Kim, 1991). In other words, when the content of a product review is concrete (versus abstract), it provides more diagnostic information and thus is perceived to be more helpful, as conjectured below:

H1: The concreteness of product review content is positively related to perceived review helpfulness.

3.2 Temporal Cue as a Moderator

In the present research context, temporal cues, as one type of contextual information presented by a review, refers to the timestamp indicating when the review was posted. Along with the timeline, a review may be generated far from or very near to the time a consumer reads the review. According to construal level theory, such a cue makes the consumer traverse a psychological distance extending from the time the consumer reads to the review to the time it was written, thus influencing his or her mental representation of the review (i.e., construal level) (Heller, Stephan, Kifer, & Sedikides, 2011). Based on construal level theory, a near temporal distance triggers the consumer to generate a low-level construal of a review, while a distal temporal distance triggers a high-level construal of a review (Liberman & Trope, 2008; Liberman et al., 2007).

In theorizing the moderating effect on review concreteness of temporal distance aroused by temporal cues, we deduce that the perceived helpfulness of a product review is heightened or lessened by the temporal cues that come with the review. Specifically, when the construal level (i.e., concreteness) of product review content is provided, a consumer construes a temporal distance based on the temporal cue. As such, the moderation effect of the temporal cue ought to be considered within the context of the given construal level of the product review content. We thus argue that the congruence between the construal level triggered by the review content and the construal level triggered by the temporal cues both facilitate consumer information processing (Trope & Liberman, 2010).

As mentioned above, distant temporal cues activate high-level construals of consumers' mental representations of reviews. Under this circumstance, the consumer would thus take a central and superordinate approach to assessing the helpfulness of a review (Liberman et al., 2007). With high-level construals, consumers expect to gain an overall understanding of the product—detailed information on the product's attributes becomes less relevant (Trope & Liberman, 2010), and abstract reviews

better serve the needs of the consumer and are perceived as more helpful.

In contrast, near temporal cues trigger low-level construals of consumers' mental representations of reviews. In such a situation, the consumer would take a subordinate and detail-oriented approach to evaluating the diagnostics of the review (Liberman et al., 2007). With low-level construals, the consumer seeks specific, detailed information about the product's attributes. As such, a concrete review would better fit the needs of this type of consumer and be perceived as more helpful.

Accordingly, we hypothesize:

H2: Temporal cues moderate the relationship between the concreteness of product review content and perceived review helpfulness. The fit between (a) distant temporal cues and abstract reviews, and (b) between near temporal cues and concrete reviews enhances the perceived helpfulness of the review.

3.3 Social Cue as a Moderator

Although researchers such as Liberman et al. (2007) suggest that there are commonalities shared by different dimensions of psychological distance (e.g., the notion of being near or far), key differences are also advocated among them. For example, Trope & Liberman (2010) point out that compared to temporal distance, which is considered unidimensional and uncontrollable, social distance is partly controllable. In addition, compared to temporal distance, the influence of social distance on an individual's perception can be more profound than that of temporal distance (Trope & Liberman, 2010). Near psychological social distance motivates an individual to categorize a counterpart as in-group and perceive him/her more positively than others who are categorized as out-group (Trope & Liberman, 2010). The implication is that temporal cues cause consumers to traverse a similar psychological distance, while social cues trigger different degrees of psychological distances among consumers. Further, the mechanisms through which a social cue affects the relationship between product review content and perceived review helpfulness are different from those associated with temporal cues. That is, instead of the congruence between construal levels of reviews and the psychological distance triggered by temporal cues, the influence of social cues on the relationship between review content and perceived review helpfulness is engendered by in-group favoritism and the trust, as elaborated below.

Social cues provide identity-descriptive information about the review's author (Forman et al., 2008), and a consumer who reads this information construes a

corresponding social distance from the author. Social distance reflects the consumer's perception of how socially close he/she is to another person; in our case, this other person is the product review author (Liberman, Trope, & Stephan, 2007). People tend to self-categorize themselves into various groups according to certain personal criteria (e.g., a person classifies himself as belonging to a baseball playing cohort) (Brown, Tajfel, & Turner, 1980; Tajfel, 1982).

Based on the identity-descriptive information provided, the consumer reading a review construes his/her social distance from the review's author (Liberman et al. 2007), which leads that consumer to categorize review authors of close social distance into his or her own social group (i.e., in-group) and socially distant review authors into out-groups (Latane & Wolf, 1981; Tajfel, 1982; Wood, 2000). A consumer would perceive a close social distance among people in the same social group or those who share his or her culture or social opinions (Latane, 1981). In other words, a consumer would treat in-group people more favorably than out-group people (Wood, 2000). For instance, an individual would tend to allocate pieces of a pie shared with others based on how socially distant he or she is from each individual (Charness et al., 2008). In addition, a consumer would expect in-group review authors to be more likely to have similar experiences with the same event or object (Tajfel, 1982). Therefore, review authors' identity-descriptive information, which serves as an indication of reviews' relevance (i.e., supplementing or substituting review information), affects their perceived helpfulness (Clark & Semin, 2008; Forman et al., 2008).

Extending this notion to the present research context, we argue that the presence of social cues affects how a consumer evaluates concrete and abstract reviews differently. As mentioned above, concrete reviews are objective and present detailed information about the product's attributes; abstract reviews are about the reviewers' personal experiences with or feelings about the product, and thus are subjective and nonfigurative (Wood, 2000). Such differences lead the consumer to perceive a higher level of ambiguity in abstract reviews. With concrete reviews, the consumer can evaluate quality and diagnosticity based on content (Soderberg et al., 2015). Thus, we expect social cues to have no bearing on judgments on the helpfulness of concrete reviews. In contrast, with abstract reviews, the consumer needs to supplement the review content with the review authors' social information in order to determine the relevance of the experiences and feelings described. When consumer and reviewer have social similarity, such as going to the same college or being geographically linked, the consumer will categorize the reviewer as in-group and develop near social

psychological distance from him/her (Liberman, Trope, & Stephan 2007). With near social distance, the consumer will expect his/her own experience with the product to be similar to that of the reviewer and thus consider the review to be relevant (Forehand et al. 2002; Hansen & Wanke, 2010; Nan 2007). Consequently, the consumer will perceive such an abstract review as presenting lower ambiguity and greater helpfulness of the abstract review. We thus propose the following hypothesis:

H3: Social cue moderates the relationship between product review content and perceived review helpfulness; specifically, the social cue (a) has no bearing when product review content is concrete; but (b) has so when product review content is abstract.

3.4 Temporal and Social Cues as Joint Moderators

We push the theorization of contextual cues further by considering their joint moderation effect. As noted by Liberman, Trope, & Wakslak (2007), it remains to be confirmed empirically “whether distances typically combine in an additive or a non-additive way . . . this prediction, however, awaits empirical corroboration” (p. 114). Sharing the same viewpoint, Clark & Semin (2008) stated that

the relatively static nature of this postulated association, however, makes it difficult to predict how various and multiple dimensions or cues would influence construal level . . . in such case of multiple distance combinations, the questions arises, which dimension of the multiple distance dimensions would influence construal in the final distance (p. 164-165).

In theorizing how the combination of different dimensions of psychological distance might influence consumers’ behavior, we are inspired by the suggestion made by Liberman, Trope, & Wakslak (2007) as well as Clark & Semin (2008), which is to consider the nature of the context itself.

Our reading of construal level theory and related context-sensitive literature suggests two related theories that might aid in our theorization of the joint moderating effect; namely the Weber-Fechner Law suggested by Kim et al. (2008) and “fit” theory suggested by Zhao & Xie (2011). The Weber-Fechner Law states that consumer behavior would not increase linearly with an increase in psychological distance induced by the second or subsequent dimensions (e.g., with temporal distance introduced first and then social distance introduced as the second dimension introduced), but would rather obey a sub-additive rule (in the context of online consumer reviews)

(Dehaene, 2003). Specifically, according to Weber-Fechner Law, a consumer would experience near psychological distance when both temporal and social distance are near; otherwise, the perceived psychological distance would be distant, that is, in the three other possible cases: (a) temporal distance is near and social distance is distant, (b) temporal distance is distant and social distance is near, and (c) both are distant (Kim et al., 2008). Essentially, a consumer would mentally construe the product as low-level only when both social and temporal cues indicate near distance.

While “fit” theory (Zhao & Xie, 2011) shows that the joint effect of multidimensional psychological distance obeys the rule that the joint effect is stronger only when both dimensional distances fit (in the context of product recommendation). A piece of information would be most influential if it came from a distant social source (i.e., far social distance as revealed in the social cue) and a distant future (i.e., far temporal distance as revealed in the temporal cue) *or* if the information was from a near social source (i.e., near social distance as suggested in the social cue) and a near future (i.e., near temporal distance as suggested in the temporal cue). The rationale is that the fit of mental construal generated from temporal and social distance induces the sense of “feeling right,” thereby raising consumer evaluation (Higgins, Idson, Freitas, Spiegel, & Molden, 2003; Lee, Keller, & Sternthal, 2010). In relation to focal context, we conjecture that when a fit exists between the temporal and social cues, the mental construal of a consumer is matched, which induces a positive evaluation of product review content.

According to Liberman, Trope, & Wakslak (2007), the *research context* is an important factor that may have different effects; however, we conjecture that the joint effect in this study better fits the explanation offered by the Weber-Fechner Law because this study and Kim et al.’s study (2008) share the same research context. Thus, we hypothesize:

H4: The relationship between product review content and perceived review helpfulness is strengthened for abstract review when both social and temporal cues reveal near psychological distance (i.e., a product review written by an author who is socially close to the consumer who reads it, AND which was written recently).

4 Research Methodology

An experiment with a full factorial design of two (product review content concreteness: concrete vs. abstract) by two (temporal cue: near vs. distant) by two (social cue: near vs. distant) was conducted to test the hypotheses. To control for potential

confounding factors, such as unwelcome environmental interruptions, we opted to conduct the experiment in a controlled laboratory setting.

4.1 Subjects

We recruited university students to participate in the experiment because they constitute an important segment (a major portion) of online shoppers in mainland China,² and prior studies have not observed a significant difference in responses between university and broader samples regarding product review evaluation (Connors, Mudambi & Schuff, 2011). A total of 269 students from a large public

university in a major city in mainland China participated in the experiment. The participants were randomly assigned to eight treatment groups (see Table 1). Participation was entirely voluntary, and each subject received CNY 20 as compensation for his/her time and effort. Participants' average age was 20.92 years, and 59.1% of the subjects were female.

² Annual Research Report of China's Online Shopping Market, 2009. http://www.jmnews.com.cn/c/2009/12/03/13/c_6010213.shtml [last accessed on November 16, 2016]

Table 1. Experiment Treatment Groups

| Treatment | Review Content Concreteness | Temporal Cue | Social Cue | N |
|-----------|-----------------------------|--------------|------------|----|
| 1 | Concrete | Near | Near | 32 |
| 2 | Concrete | Near | Distant | 33 |
| 3 | Concrete | Distant | Near | 36 |
| 4 | Concrete | Distant | Distant | 35 |
| 5 | Abstract | Near | Near | 32 |
| 6 | Abstract | Near | Distant | 32 |
| 7 | Abstract | Distant | Near | 36 |
| 8 | Abstract | Distant | Distant | 33 |

4.2 Pretest

We used a laptop computer as the focal product because it is a common product with which most subjects are familiar. Product brand and price potentially influence consumer judgment of a product review, and thus are controlled for as follows (Dodds, Monroe & Grewal, 1991). We selected an unknown product brand, which was verified through a pretest. In the pretest, we recruited 19 students from the same sample pool into the main experiment. The 19 students were instructed to read the introductions of a laptop computer, which included a series of attributes, such as the brand, hard disk capacity, graphics card, internal memory, and CPU. Based on their understanding of the product, the students were asked the following questions: (1) Are you familiar with this laptop computer brand? (2) With these product attributes, how much do you think this computer would cost? The results indicated that nobody was familiar with the brand (all of the students rated it "1"

on a seven-point scale, 1 being "very unfamiliar" and 7 being "very familiar"). With regard to product price, the average price suggested was CNY 6,689.50, with a standard deviation of CNY 971.70. Therefore, in the main experiment, we stated that the computer's price was around this mean value.

4.3 Independent Variables

Our focus on product review information involves both review content and contextual review cues (temporal and social cues). As defined in Section 3.1, product review content is deemed to be concrete if the review includes evaluation of product attributes or characteristics, whereas product review content is abstract if it expresses the author's personal experiences with and feelings about the product without discussing product attributes. Our operationalization of product review concreteness is in line with prior studies, e.g., Li et al. (2013). Table 2 presents the operationalized concrete and abstract review.

Table 2. Concrete and Abstract Review (Translated to English)**Concrete product review content:**

This laptop is professional grade. The Inter Core i5 2.5GHZ CPU meets all my professional needs, and I really enjoy the 1400 x 860 resolution ratio included in the notebook—it's really easy to read any document. Moreover, the weight of the laptop (1.5 kilograms) also fits well with needs of my mobile office. The metal coating covering the notebook also stands up to daily use. The 4G internal storage and 500G 7200 rpm SATA hard drive solves the problem of storing a large amount of industrial data. Meanwhile, the Inter Core i5 2.5GHZ is really awesome—all my programs run quickly, most of time loading within 30 seconds. In addition, a series of copyrighted software, such as image processing software, the antivirus program, and the hard drive protection software on installed in the notebook make its performance particularly outstanding. For instance, the hard drive protection software prevents me from worrying about the data loss. In fact, all of the copyrighted software programs are so useful to me. Despite the merits of the notebook, its fatal disadvantage is its battery life, which is three hours most of the time, but I imagine that this weakness is common to many notebooks like this.

Abstract product review content:

The design, the craftsmanship as well as the specs of this notebook are good. There are no flaws that I found after I purchased it. I think this notebook computer is really reliable. The screen looks very good with high resolution ratio, and the appearance and design are excellent. The computer specs are reasonable, and I think this computer is a really a good choice. It has medium weight, suitable for most types of users, and especially for businessman. Also, the metal coating covering the notebook is very attractive. The processor and internal storage could be capable of solving my professional challenges involved with storing a large amount of industrial data. Furthermore, the notebook runs all my programs quickly. In addition, a series of copyrighted software, such as image processing software, an antivirus program, and hard drive protection software are all installed on the notebook, making it especially outstanding. One weakness of the notebook is its battery. It quickly runs out of battery life when I use it for work.

Note: In the experiment, the concrete and abstract reviews were written in Chinese. For ease of reading here, they were translated into English.

We operationalized contextual review cues, namely temporal and social cues, by providing additional contextual information beside the product review content. The temporal cue was the timestamp of the date on which the product review was written; the social cue was the author's place of origin. The operationalization of social distance using "place of origin" derives from studies in human-computer interaction (e.g., Moon, 1999) and social identify theory (e.g., Duck, Hogg, & Terry, 1999). In human-computer interaction studies, Moon (1999) designed an experiment to test whether people would respond differently when they were told that they were interacting with people from near or far. They found that "place of origin" typically has a significant influence on people's responses. In addition, the theorization of social identity theory (refer to Mackie et al. 1990) indicates that "place of origin" cues are more likely to arouse consumers' in-group perception. Based on the above-mentioned studies in different areas, it is clear that "place of origin" is a reasonable way to operationalize social distance. Meanwhile, our operationalization is also in line with an especially relevant study conducted by Kim et al. (2008).

4.4 Control and Dependent Variables

Perceived review helpfulness, the dependent variable, was measured using three measurement items adopted from Huang et al., (2013): (1) "This review improves my ability to make a decision on whether or not to

buy this product"; (2) "This review provides me with insights into whether or not I would like this product"; and (3) "The review contains useful information about this product." All of the items are reflective indicators and were measured on a seven-point Likert scale from 1 ("strongly disagree") to 7 ("strongly agree"). Four control variables were also introduced to control for possible bias, as suggested in prior studies (Connors et al., 2011); two of these variables were demographics related (i.e., age and gender), and the other two were associated with product knowledge and online shopping experience. Reflective items for the latter two control variables were adopted from prior studies (Lichtenstein, Netemeyer & Burton, 1990; Murray & Schlacter, 1990). Mindful that the experimental subjects were of native Chinese origin, we used a committee approach to translate the questionnaire (Wan, Compeau, & Haggerty, 2012), following a four-step revision procedure to ensure the validity of the measurement items³.

4.5 Experimental procedure

The experiment was conducted in an electronic commerce laboratory using a self-developed experiment system. The entire experiment was conducted over three days and involved 16 sessions. Upon arrival at each session, the subjects were asked to take a random seat. We informed them about our monetary reward policy (e.g., they could only obtain monetary compensation after they had completed the

experiment) to increase their motivation and involvement (Lim, Sia, Lee, & Benbasat, 2006). They were subsequently instructed to read the experiment instructions carefully. We spent roughly ten minutes answering questions about the experiment. Each subject was given an account to access the experiment system. The accounts were randomly selected from a prepared account pool for each treatment (e.g., a001, a002 for treatment 1; b001, b002 for treatment 2), and the system attempted to balance the number of subjects across the treatments.

After the subjects logged into the system, they were presented with a scenario describing an online shopping task (Shafir, Simonson, & Tversky, 1993). They were subsequently taken to the next page, where a mock-up shopping website was presented (for a screenshot, see the Figure A in the appendix). This webpage included an introduction to the product (i.e., its various attributes and its price), the contextual review cues, and a product review that was randomly extracted from a review sample pool. This type of simulated shopping setting is consistent with prior studies (Li et al., 2013). The time spent on reading and comprehending the product review information was recorded. We performed this step in order to identify nonserious subjects who skipped to the next page within a very short span of time (e.g., clicking to the next page from the product review information within five seconds). On average, each subject spent 422.78 ($\sigma = 162.5$) seconds going through the product information and review. Based on their reading and comprehension of both, the subjects were subsequently instructed to complete a questionnaire about their impression of the review (for manipulation check) and their evaluation of its helpfulness (for hypothesis testing). After completing the questionnaire, the subjects were directed not to discuss any details of the experiment with their friends and classmates (to avoid possible influence on participations in the subsequent session). Finally, we thanked the subjects.

5 Data Analysis Results

5.1 Control and Manipulation Checks

We examined the treatment groups for any systematic bias in terms of four control variables: age, gender, product experience, and online shopping experience. We ran ANOVA analyses using perceived review helpfulness as the dependent variable. The results indicated a lack of significant difference across treatment groups due to the control variables ($F_{\text{age}} = 0.634, p > 0.1$; $F_{\text{gender}} = 0.623, p > 0.1$; $F_{\text{product knowledge}} = 0.051, p > 0.5$; $F_{\text{shopping experience}} = 2.182, p > 0.1$). Thus, control over the subjects' characteristics through randomization was deemed to be successful.

We also conducted manipulation checks to ensure the successful manipulation of the product review content concreteness, as well as temporal and social cues. We verified review content concreteness manipulation by asking the subjects to rate the following measurement item on a seven-point Likert scale (Huang et al., 2013): "The review I read describes the details of the products." We conducted a *t*-test to compare the mean ratings for concrete review content (mean = 5.510; $\sigma = 1.095$) and abstract review content (mean = 4.150; $\sigma = 1.523$); the *t*-test result revealed a significant difference ($t = 8.590, p < 0.01$). Temporal cue manipulation was checked by asking the subjects to rate the statement, "The review I read was posted in the recent past" (Martin, Gnoth, & Strong, 2009); the *t*-test result suggested a significant difference ($t = -3.472, p < 0.01$) between the temporally near cue (mean = 3.26; $\sigma = 1.736$) and temporally distant cue (mean = 2.55; $\sigma = 1.591$). We checked social cue manipulation in accordance with Zhao & Xie, (2011) and Liberman, Trope, & Stephan (2007), by asking the subjects to rate the statement, "I feel the author of the product reviews is socially close to me." The *t*-test result revealed a significant difference ($t = 2.806, p < 0.01$) between socially distant cue (mean = 4.05; $\sigma = 1.442$) and socially near cue (mean = 4.52; $\sigma = 1.299$), which suggested a successful manipulation.

5.2 Hypotheses Testing

We initially ran an exploratory factor analysis on the three measurement variables—namely, perceived review helpfulness, product knowledge, and online shopping experience. The factor analysis results revealed that both convergent and discriminant validity were good (see Table 3). To check for construct reliability, we also computed the Cronbach's alpha values for the three measurement variables; they were 0.887, 0.876, and 0.767 for perceived review helpfulness, product knowledge, and online shopping experience, respectively—all above the threshold of 0.7.

³ First, after an English version of the questionnaire was compiled, a native Chinese speaker fluent in English independently translated it. Second, a research assistant was instructed to translate the Chinese version back into English. Third, the items were verified for translation accuracy and refined by the first two authors to achieve a consensus. Fourth, the Chinese version of the draft was then distributed to three IS professionals (who are good at speaking both Chinese and English) to evaluate the accuracy of the translation, resulting in several modifications of the wording.

Table 3. Factor Analysis of Dependent Variables and Control Variables

| | Component | | |
|-----|--------------------|-------------------|---------------------|
| | Review helpfulness | Product knowledge | Shopping experience |
| RH1 | .914 | .001 | .023 |
| RH2 | .908 | .067 | .046 |
| RH3 | .887 | -.048 | .065 |
| PK1 | -.011 | .840 | .197 |
| PK2 | .018 | .893 | .178 |
| PK3 | .007 | .756 | .154 |
| PK4 | .010 | .860 | .151 |
| SE1 | .060 | .236 | .868 |
| SE2 | .058 | .240 | .865 |

Table 4 presents the descriptive statistics. H1 posits that concrete reviews are perceived as more helpful than abstract reviews. To test this hypothesis, we ran an ANOVA analysis, which demonstrated a significant major effect of product review content concreteness on review helpfulness ($t = -2.200$, $p <$

0.05). The mean value of perceived review helpfulness under the provision of concrete product review content (mean = 4.98; $\sigma = 1.189$) was larger than that under the provision of abstract product review content (mean = 4.65; $\sigma = 1.225$). Thus, H1 is supported.

Table 4. Descriptive Statistics

| Review helpfulness mean (σ) | | Temporal cue (near) | | | Temporal cue (distant) | | |
|--------------------------------------|----------|---------------------|----------------------|-----------------|------------------------|----------------------|-----------------|
| | | Social cue (near) | Social cue (distant) | Subtotal | Social cue (near) | Social cue (distant) | Subtotal |
| Product review content | Concrete | 5.53 (0.915) | 5.55 (1.003) | 5.54 (0.953) | 4.61 (1.103) | 4.31 (1.207) | 4.46 (1.157) |
| | Abstract | 5.03 (1.204) | 3.72 (1.276) | 4.38 (1.397) | 5.25 (0.967) | 4.55 (0.869) | 4.91 (0.981) |

H2 posits that the temporal cue moderates the relationship between product review content concreteness and perceived review helpfulness: (a) *the fit between a distant temporal cue and an abstract review*, and (b) *the fit between a near temporal cue and a concrete review enhances the perceived review helpfulness*. ANOVA analysis results revealed a significant interaction effect between product review content concreteness and temporal cue ($F = 31.725$, $p < 0.001$). We performed simple effect analysis to further explore the outcome. We divided the data set based on product review content concreteness. Under the provision of concrete product review content, the subjects perceived the product review information as significantly more helpful ($t = 5.926$, $p < 0.01$) when the temporal cue reflected near temporal distance

(mean = 5.54; $\sigma = 0.953$) from them versus when the temporal cue reflected far temporal distance (mean = 4.46; $\sigma = 1.157$). Under the provision of abstract product review content, the subjects perceived the content to be significantly more helpful ($t = -2.552$, $p < 0.05$) when the temporal cue reflected far temporal distance (mean = 4.91; $\sigma = 0.981$) from them versus when the temporal cue reflected near temporal distance (mean = 4.38; $\sigma = 1.297$). Figure 2 shows the graphical representation of the interaction term. Essentially, we observed that concrete product review content is perceived as more helpful as temporal distance decreases (i.e., having a nearer temporal cue), but abstract product review content is perceived as more helpful as temporal distance increases (i.e., having a farther temporal cue). Hence, H2 is supported.

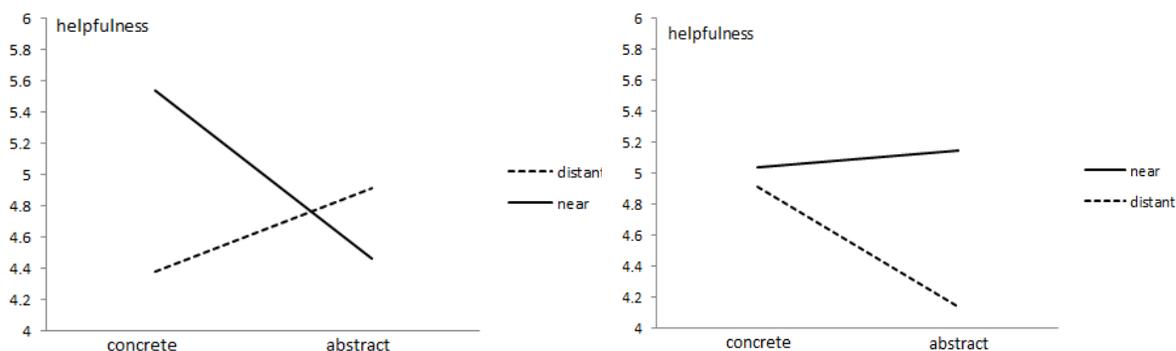


Figure 2. Interaction Effects of Temporal and Social Cues and Review Content Concreteness

H3 posits that social cues moderate the relationship between product review content concreteness and perceived review helpfulness: the social cue (a) has no bearing when product review content is concrete but (b) has a bearing when product review content is abstract. ANOVA analysis results revealed a significant interaction effect between product review content concreteness and social cues ($F = 9.043, p < 0.01$). We performed simple effect analysis to further explore the outcome. We divided the data set based on the product review content concreteness. Under the provision of concrete product review content, there was no significant difference ($t = 0.648, p > 0.10$) between the effect of socially near (mean = 5.04; $\sigma = 1.112$) and socially distant (mean = 4.91; $\sigma = 1.267$) situations on the evaluation of review helpfulness. However, under the provision of abstract product review content, product reviews were perceived as more helpful in socially near (mean = 5.15; $\sigma = 1.083$) than in socially distant situations (mean = 4.14; $\sigma = 1.158$). Figure 2 shows the effect. These results support H3.

H4 posits that the relationship between review concreteness and review helpfulness is strengthened for abstract reviews only when both social and temporal cues reflect near psychological distance (i.e., Weber-Fechner Law). To test this hypothesis, we labeled the circumstances in which both temporal and social cues were near as “near” psychological distance situations and other circumstances as “far” psychological distance situations. Our analysis of situations using Weber-Fechner Law revealed that consumers’ evaluation of review helpfulness differed significantly ($t = 2.029, p < 0.05$) under the joint effect of temporal and social cues, with a mean value of 5.03 (1.204) in the near situation and 4.53 (1.213) in the far situation. Therefore, H4 is supported.

6 Discussion

This study enhances our understanding of how contextual review cues (singly and jointly) moderate

the relationship between product review content and consumer evaluation of its helpfulness. We know from construal level theory that temporal distance and social distance, as different dimensions of psychological distance, share similar characteristics that influence consumers to some extent (Liberman, Trope, & Wakslak, 2007), but, at the same time, different dimensions of psychological distance also possess their own unique features (Clark & Semin, 2008). However, how they differ remains largely unknown. Our findings show that temporal cues can impact consumers’ evaluation of both concrete and abstract reviews, while social cues play a role in influencing consumers’ evaluation of abstract reviews only. The findings offer empirical support for previous deductions regarding the subtle differences between temporal and social distance in the specific research context of online reviews. In addition, the findings also reveal that temporal cues exhibit an augmentation nature of moderation, while social cues are relatively more differentiated in their moderating influence.

This study also investigated how temporal and social cues jointly affect consumers’ evaluation of reviews as helpful, and presents consistent findings in line with the Weber-Fechner Law proposed by Kim et al. (2008). Although researchers have widely noted the complex nature of studying the combination effect of different dimensions of psychological distance (Liberman, Trope, & Wakslak, 2007), this study, to some extent, validates the proposition that different dimensions of psychological distance can combine to have a joint effect. The findings significantly improve our understanding of how contextual review information cues influence consumers’ evaluations of reviews as helpful.

As noted, this study only took an abstract review into consideration when studying the joint effect of temporal and social distance. It is understandable that readers would be eager to know what the results would be if a concrete review were evaluated under the joint influence of temporal and social cues. Additional analysis shows that reviews are perceived

as significantly more helpful ($t = 3.601, p < 0.05$) when temporal distance and social distance are jointly near (mean = 5.53, $\sigma = 0.915$) versus distant (i.e., the other three situations) (mean = 4.81, $\sigma = 1.215$), in line with the Weber-Fechner Law; but not significantly different ($t = 0.794, p > 0.10$) when they are jointly near or jointly distant (mean = 4.90, $\sigma = 1.233$) versus when these conditions are disparate (mean = 5.06; $\sigma = 1.149$), in line with the “fit theory” framework. The findings further show that, since social distance does not directly influence consumers’ evaluation of concrete reviews, it typically plays a complementary role to temporal distance, jointly affecting consumers’ evaluations according to the Weber-Fechner Law. This finding, together with the effect on abstract reviews, implies that the Weber-Fechner Law is stable in its influence on consumers’ evaluation behavior in this specific research context.

6.1 Theoretical Contributions

Our research makes significant contributions to the literature and construal level theory in four ways. First, this study contributes to the review helpfulness literature. Existing studies published in a broad range of areas suggest that review helpfulness is determined by a series of review characteristics (e.g., review length or sentence length) (Cao et al., 2011; Pan & Zhang, 2011; Willemsen et al., 2011), whereas limited attention has been given to the influence of contextual review cues. The present study, as an initial attempt, explores and validates the idea that consumer evaluation of review helpfulness should not only be determined by the review content itself, but should be contingent on contextual review cues.

Second, this study extends construal level theory to the online review comprehension context. Although construal level theory has been validated in many consumer behavior contexts (e.g., Liberman, Trope, & Wakslak, 2007; Wright, Manolis, Brown, Guo, Dinsmore, Chiu, & Kardes, 2012), the issue of how the various dimensional distances (e.g., temporal and social distance) influence consumer psychological distance remains under-investigated. Through the validation of our work, we advance the theoretical understanding of how temporal distance and social distance influence consumers’ perception of review helpfulness. Importantly, we theorize and empirically demonstrate the individual moderating effects of temporal and social distance in the context of consumers’ judgment on the helpfulness of product review content.

Third, this study provides empirical evidence through investigating the joint effect of multiple dimensions of psychological distance, thus extending previous knowledge in recognizing construal level theory. In a seminal paper on construal level theory, Liberman Trope, & Wakslak (2007) raise the issue of “whether distances typically combine in an additive or a non-

additive way . . . this prediction, however, awaits empirical corroboration” (p. 114). Our review of the literature shows that only two papers, Kim et al. (2008) and Zhao & Xie (2011), provide empirical findings about multidimensional influence. Thus, this study is one of the very first to validate the proposition that there is a dynamic effect of multiple psychological distance impacts, through providing empirical evidence.

Fourth, the findings of this study extend our understanding of the contingent effects of social cues on the relationship between review concreteness and perceived helpfulness. Although a few prior studies (e.g., Forman et al., 2008; Hu et al., 2008) revealed that reviewer identity information disclosure can influence perceived review helpfulness and product sales, the way in which social cues might interact with review content itself has previously attracted little attention. In our study, we found that when the review information is abstract, review author identity information (i.e., socially near or distant) plays a significant role in influencing consumer evaluation of review helpfulness. Meanwhile, when review information is concrete, this effect is insignificant. In other words, if review content is concrete, the identity of the author is unimportant, thus extending our knowledge.

6.2 Practical Implications

Our study also provides two practical guidelines for website designers and system developers who intend to use an online consumer review system as a platform for facilitating product judgment.

First, this study encourages practitioners to focus on the significant role of contextual review cues. Specifically, from the temporal distance perspective—when a review was posted in the distant past, abstract review information was more helpful to consumers’ purchase decision-making. By contrast, when a review was posted in the near past, a consumer would be more likely to prefer that it include concrete information. Therefore, when presenting product reviews to potential consumers, website managers could apply an algorithm for screening reviews that would match the review content concreteness and the posting time.

Second, with regard to the effect of social distance, our results show that website managers can facilitate consumers’ decision-making by disclosing review authors’ identity when necessary. Specifically, when the review content is mined and identified as concrete, then the identity of the individual who posted it is unimportant. However, when an algorithm identifies review content as abstract, the review system could present the consumer with reviews posted by people who are socially close to him/her and disclose the authors’ identity information. The consumer would thus perceive such reviews to be

more helpful and would be more willing to make a purchasing decision based on their content.

6.3 Limitations and Research Directions

As with all research, this work has its limitations, which provide research directions for future studies. First, previous studies have implied that reviewer expertise influences consumer perception of a review (Connors et al., 2011). However, the issue of whether this type of information would influence consumer perception of social distance remains unknown. Therefore, to examine the pure effect induced by social closeness versus distance, we disregarded the issue of reviewer expertise in our study. Future studies should consider the effect of reviewer expertise.

Second, given that this research considers product review concreteness as externally determined manipulation (i.e., given), this variable may possibly serve as a perceptual assessment variable as well. Thus, an alternative means of examining product review concreteness could be through mediating the perceptual variable between the psychological distance of the review and consumer evaluation of the review information.

Third, this study examined the research question in the Chinese context only, leaving room for exploration of cultural differences between different countries. We hope that further studies could be conducted to compare the behaviors of consumers from different cultures.

Fourth, our research findings are based on a search product review (i.e., laptop computer reviews) and it is recognized that reviews of other kinds of products, such as experience products, are increasingly prevalent. Furthermore, with respect to H2, our findings reveal that concrete product review content is perceived as more helpful when combined with closer temporal cues, but abstract product review

content is perceived as more helpful when combined with more distant temporal cues. It should be noted that we used a search technological product (i.e., laptop computer) and that the attributes of such products change quickly, which may reduce consumer interest in studying the specific attribute parameters of a product from six months ago. Consumers may also focus more on understanding the subjective performance of each attribute. For these reasons, future research could consider extending this study by considering nonsearch products (e.g., hotel accommodations) and evaluating how contextual cues affect consumer evaluation of product review content.

7 Concluding Remarks

Utilizing construal level theory as the theoretical lens, this study advances our understanding of the differentiated moderation effect of two forms of contextual review cue—namely, temporal (i.e., when the review was posted) and social cues (i.e., who posted the review)—on consumers' evaluation of the helpfulness of online product review content, which can vary in its concreteness. The theorization and empirical findings of this study offer a theoretically driven principle to guide designers of shopping website systems on how to provide product review information; by doing so, this research also extends the theoretical granularity of construal level theory.

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Appendix

APT 牌 T300 笔记本电脑介绍：



价格：¥6800.00
 屏幕大小：14.0 英寸
 CPU型号：Intel酷睿i5 2.5GHz
 内存容量：4GB DDR3
 硬盘容量：500GB SATA
 显卡芯片：AMD Radeon HD
 操作系统：Windows 7 Home Basic 64 bit

请阅读下面来自本校使用该产品的学长对于产品的评论：

评论人：Jerry
 就读学校：浙江财经大学
 评论时间：2013年07月22日

这款笔记本外观专业大方，上档次。2.5GHz Intel酷睿5 的CPU能够满足高性能的事务处理能力。14.0英寸1400X860分辨率使得本本能够提供清晰舒适的视觉享受，工作的时候，看文档也十分舒服。而且，1.9kg的重量也特别适合我的移动办公的需求。机身整体的金属喷漆工艺，在海滨休闲场合使用十分得体。

以前我平常每天的工作存储大量的行业数据，我总担心内存不够用。这款本本有4G的内存和500G的7200rpm SATA硬盘，解决了我的后顾之忧。而且，我感觉酷睿5，2.5GHz的处理器的特别给力。用它编程，处理数据十分快速，一般算一个程序也就是30几秒。这个本本好的地方是它在出厂的时候内置了大量的正版软件。比如图像处理软件，杀毒软件，硬盘软件等等。尤其是它自带的专业硬盘数据保护软件，可以实时备份和加密硬盘的数据。对于我来说，这些软件太有用了。我就不用整天为了备份和加密数据而烦心了。弄不好还丢失了数据。那样的话就真是麻烦了。

这个本本的电池是5600毫安时。充电的电池一次可以正常使用3小时。唉！看来电池真是这种本本的生命线呀。不过，任何本本都有这个毛病吧。所以，这款本本我还是很喜欢的。不错啦！

APT 牌 T300 笔记本电脑介绍：



价格：¥6800.00
 屏幕大小：14.0 英寸
 CPU型号：Intel酷睿i5 2.5GHz
 内存容量：4GB DDR3
 硬盘容量：500GB SATA
 显卡芯片：AMD Radeon HD
 操作系统：Windows 7 Home Basic 64 bit

请阅读下面来自本校使用该产品的学长对于产品的评论：

评论人：Jerry
 就读学校：浙江财经大学
 评论时间：2014年3月22日

这款本本的外观，设计还有配置都不错。买回来之后没有发现任何问题。这个APT品牌的笔记本还是值得信赖的。电池续航又大又耐用。好用实在。这款本本外观漂亮，够档次！机器配置均衡，用这款本本绝对是今年的流行趋势，时尚之选呀！这款本本有极大的屏幕，分辨率高，真是又大又耐用。怎么管怎么喜欢！这个本本重量适中，放在包里不怎么沉。非常有质感。尤其是机身背面的烤漆工艺，看起来就像是金属质地一样。

这个本本有着超强的处理器和超大的内存。以前我用的本本总担心内存不够。现在用了这款本本之后完全没后顾之忧了。平时可以随意地存储我想要的东西。而且，这个本本的处理特别给力。用本本处理文档，看高清电影一点都不卡。这个本本最给力的地方是它出厂的时候内置了大量的正版软件。比如图像处理软件，杀毒软件，硬盘软件等等。对于我来说，这些软件太有用了。我就不用整天为了下载安装软件而在网上寻找，弄不好还会感染病毒。那样的话就真是麻烦了。

这个本本唯一不足的一点是电池不太够用。我每天用它办公，玩游戏，上网，充电的电池也用不了多久。唉！看来电池真是这种本本的生命线呀。真希望电池能够做的大一点。不过，任何本本都有这个毛病吧。所以，这款本本我还是很喜欢的。不错啦！

Concrete Product Review Content

Abstract Product Review Content

Figure A. Interaction Effects of Temporal and Social Cues and Review Content Concreteness

About the Authors

Liqiang Huang is an associate professor of information systems at Zhejiang University. His research focuses on digital commerce; cloud computing, and human-computer interaction. His work has appeared in *Journal of Management Information Systems*, *Information & Management*, and *International Journal of Electronic Commerce*.

Chuan Hoo Tan is an associate professor of information systems at the National University of Singapore. He focuses on human-computer interaction, digital commerce, and business analytics. His work has appeared in *MIS Quarterly*, *Information Systems Research*, *Journal of Management Information Systems*, and *Journal of the Association for Information Systems*.

Weiling Ke is professor of operations and information systems at Clarkson University. Her research interests include the adoption and diffusion of IT-enabled innovations, such as supply chain integration, enterprise systems and open innovations. She has published works in *Journal of Operations Management*, *Journal of Management Information Systems*, and *Decision Support Systems*.

Kwok Kee Wei is chair professor of information systems at the National University of Singapore. He serves as the dean of the School of Continuing and Lifelong Education at the National University of Singapore. He was awarded the AIS LEO Award for Lifetime Exceptional Achievement in Information Systems at the International Conference on Information Systems in 2016. He has published works in *MIS Quarterly*, *Management Science*, *Information Systems Research*, and *Journal of Management Information Systems*, among others.

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