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Manipulating Temporal Cues and Message Concreteness for Deal Communication:
A Study on Microblogging Site

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ABSTRACT

Online merchants often use social media to communicate deal messages to directed consumers, but they face the fundamental challenge of how to effectively communicate deal messages to these consumers using that medium. This research seeks to address this challenge by building on the construal level theory to theorize that consumers' purchase intentions in response to the products promoted via social media communication are affected by the concreteness of promotion messages and its interaction with message promotional time and deal expiration time. A between-subject experiment was conducted, and the findings suggest that concrete messages lead to higher purchase intentions. Through interacting message concreteness, message promotional time and deal expiration time, we show that the congruency of a concrete message with either, but not both, temporal cue lead to higher purchase intention. This study thus provides theoretically grounded insights on how to better communicate deal information on microblogging sites.

KEYWORDS

Construal Level Theory, Deal Expiration Time, Group-Buying, Message Concreteness, Message Promotional Time, Microblogging, Social Media

INTRODUCTION

Social media has attracted merchants' attention due to its potential to provide business value (Culnan, McHugh, & Zubillage, 2010; Huang, Zhang, Li, & Lv, 2014). To achieve this value, merchants communicate and interact with consumers in social media brand communities (Goh, Heng, & Lin, 2013). The objective of doing so is to increase the likelihood that consumers purchase products from the communicating merchant (Xie & Lee, 2015). Amidst the much-anticipated prospect, for merchants, of tapping into social media to connect with their consumers (Culnan, McHugh, & Zubillage, 2010; Goh, Heng, & Lin, 2013; Lukoff, 2011; Xia, 2013), anecdotal evidence of sales generation through social media remains mixed[1]. Central to this is less the quantification of the value of social media but more the pragmatic question of how to effectively communicate deal messages to consumers via such media (Stelzner, 2011). Mangold and Faulds (2009) echoed this viewpoint and indicated that the degree to which social media is effectively utilized determines its value realization. Merchants could communicate messages on social media with rich information in order to increase sales (Goh, Heng, & Lin, 2013). Similarly, actively responding to consumers' messages in social media communications could positively affect a merchant's market performance—but the intensity of such messages does not affect this (Chung, Animesh, Han, & Pinsonneault, 2014). Moreover, employing social media management tools, adopting broadcasting accounts, and using a conversational communication

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approach can improve the attitudinal loyalty of consumers, which is beneficial for a merchant's sale performance (Risius & Beck, 2015).

Although some characteristics of social media messages (e.g., richness; intensity) and social media accounts (e.g., broadcasting; conversational approach) have been examined, the knowledge gap as to how merchants can successfully communicate on social media platforms—and which social media strategies they should pursue—remains to be filled (Aral, Dellarocas, & Godes, 2013). This study endeavors to take this research direction by seeking an answer as to how communication through social media can entice consumers better, in order to enhance product sales. Specifically, it investigates how the temporal cues and the concreteness of the promotional message affects consumers' purchase intentions. Regarding consumers' evaluation of merchants' promotional messages, construal level theory (CLT) and its "fit" literature provide insights. It has been found that consumers' evaluations could be strengthened when their construal of the messages is congruent with one of the four dimensions of psychological distance—namely, spatial, temporal, social, or hypothetical distance (Trope, Liberman, & Wakslak, 2007; Kim, Rao, & Lee, 2009). Moreover, the interaction effect of two dimensions of psychological distance has also been briefly explored—such as the interaction effect of social and temporal distance on consumers' responses to peer recommendations (Zhao & Xie, 2011) and consumers' evaluations to products (Kim, Zhang, & Li, 2008). However, two contextual cues from the same dimension—cues which are likely to be embedded in the deal promotional messages—have not been investigated. This study looks at such a case by focusing on the message promotional time and the deal expiration time, which are two temporal cues regularly embedded in promotional messages. The author further explores the effect that their interactions—together with message concreteness—have on consumers' evaluations.

The author contextualizes the research in the group-buying domain in China where merchants (i.e., commercial websites that offer group discounts for local deals, such as restaurant menu specials and movie ticket discounts) heavily depend on microblogging (i.e., a social medium in the form of blogging with short posts) for deal communication (Liu & Sutanto, 2012). The author's thesis is that consumers' purchase intention is influenced by the concreteness of the promotional message and its congruency with one of the temporal cues presented in that message. This study contributes to researchers in several ways. Firstly, this study enriches the CLT literature by investigating the interaction effect that two contextual cues—involved from the same dimension of psychological distance—have on consumers' evaluation. Secondly, this study addresses the means through which social media can be well integrated into daily commercial activities, from the merchant's perspective. Thirdly, this study also adds to the existing social media literature, which mainly focuses on the effects of consumer-generated content—such as consumer reviews and product ratings—on purchase intention (Duan, Gu, & Whinston, 2008; Liu, 2006; Moon, Bergey, & Iacobucci, 2010; Ye, Law, & Gu, 2009). The findings of this study inform merchants as to how product deals can be communicated via their social media accounts.

The rest of the paper is organized as follows: First, the author reviews previous studies that examine how merchants communicate promotional messages to consumers via social media and how group-buying websites use social media for communication. Then, the author introduces the theoretical foundation and develop these hypotheses. The research methodology and the empirical results are presented next. The author then concludes the paper by discussing the implications of the research and by suggesting directions for future research.

RESEARCH BACKGROUND

Social media is an important channel for information communication (Goh, Heng, & Lin, 2013; Luo, Zhang, & Duan, 2013). It is used in various areas, including humanitarian aid (Yates & Paquette, 2011), e-government (Vakeel & Panigrahi, 2018), and organizations (Aggarwal, Gopal, Sankaranarayanan, & Singh, 2012). It is also used as a product promotional channel for movies (Chen & Xie, 2008; Liu,

2006; Moon, Bergey, & Iacobucci, 2010), hotel room accommodations (Ye, Law, & Gu, 2009), and books (Chevalier & Mayzlin, 2006). From a commercial perspective, by attracting numerous followers (Zadeh & Sharda, 2014), merchants can engage in a close communication relationship with their consumers (Laroche, Habibi, Richard, & Sankaranarayanan, 2012; Hur, Ahn, & Kim, 2011; Ashley & Tuten, 2015). The outcomes are positive brand attitude (Schivinski & Dabrowski, 2016), trust (Laroche, Habibi, & Richard, 2013), equity (Dehghani & Tumer, 2015), loyalty (Zhang, Zhang, Lee, & Feng, 2015), and value (Yang, Lim, Oh, Animesh, & Pinsonneault, 2012). However, the succinct and crucial question asked regarding using social media to reap these benefits, including product sales (Ashley & Tuten, 2015), is one word: "How?" It is proposed that merchants could employ social media management tools, adopt broadcasting accounts, and use a conversational communication approach in order to improve consumers' attitudinal loyalties and word-of-mouth promotion (Risius & Beck, 2015). As to the message-construction aspect, studies have suggested that communication messages loaded with rich information have a positive effect on sales performance (Goh, Heng, & Lin, 2013; Chung, Animesh, Han, & Pinsonneault, 2014). However, the intensity (the volume) of the messages is not instrumental in terms of sales performance and, in the worst case, could lead to information overload and bad publicity (Hutter, Hautz, Dennhardt, & Fueller, 2013).

This research adds to the stream of research on the design of messages by considering two temporal cues of social media messages communicated by the merchants. It aims to study how they jointly affect consumers' evaluations of promoted products. For an investigation into this phenomenon, one needs first to gain a preliminary understanding of the focal context of group-buying merchants communicating deal promotional messages through social media.

Social Media and Group-Buying Context

Merchants who heavily use social media as a communication mode include those who are in the group-buying business. Group-buying is the strategy of selling quantities of products within a short period by offering a group discount (Liu & Sutanto, 2015). Prior group-buying studies have observed that consumers are driven by incentive mechanisms for participation (Kauffman, Lai, & Ho, 2010) and by herding behavior (Liu & Sutanto, 2012). It is reported that consumers often become aware of deals through social media (Li & Wu, 2013); and the reviews written on the social media could influence consumers' perceptions of group-buying deals (Lee, Kim, Chung, Ahn, & Lee, 2016; Lim, 2015).

Group-buying websites offer numerous products for sale, and each product is offered for a short period (e.g., one to several days). Because of this, for deal communication, merchants rely on social media, particularly microblogging, rather than on traditional media, such as printed media and banner advertising, which are both slow and costly in terms of reaching consumers (Liu & Sutanto, 2015). Indeed, microblogging sites can be used to achieve word-of-mouth dissemination and to convince potential consumers to purchase the deals (Risius & Beck, 2015). In China, group-buying websites frequently use microblogging sites to promote their deals and maintain the relationships with consumers (Liu & Sutanto, 2015). In this research, the author focuses on microblogging sites and investigates how to better broadcast deal information in order to increase purchase intention. The author's thesis, which has been put forward earlier, is that the effectiveness of the group-buying website's microblogs in increasing purchase intention depends on the concreteness of the message and on its congruency with one of the temporal cues associated with the message.

THEORETICAL FOUNDATION

This study proposes that the manner in which consumers construe communications affects the effectiveness of those communications. The proposition anchors on CLT, which is an account of how psychological distance between individuals and their targets influences the individual construal levels of those targets. The theory suggests that psychological distance is an important determinant of whether the primary or the secondary peripheral characteristics are used as the basis of individual

evaluation (Trope & Liberman, 2003; Trope, Liberman, & Wakslak, 2007). CLT assumes that people mentally construe objects that are psychologically near them in terms of low-level, detailed, and contextualized features, whereas they construe the same objects or events at a distance in terms of high-level and abstract characteristics (Trope, Liberman, & Wakslak, 2007). As psychological distance is egocentric, its reference point is the self, in the here and now (Trope & Liberman, 2010). Differences in time, space, social distance, and hypotheticality constitute different distance dimensions (Liberman & Forster, 2009; Trope & Liberman, 2010). Several empirical studies have investigated the effects of psychological distance on construal level. Liberman et al. (2002) examined temporal differences in construals and reported that people think about a set of objects in more superordinate, abstract terms in the distant-future condition as compared to the near-future condition. Fujita et al. (2006) showed that the events in a film are described with more abstract language by people who believe such events were located in a spatially distant location. Social distance is influenced by the power differences among individuals (Trope, Liberman, & Wakslak, 2007). Liviatan et al. (2008) reported that students prefer the use of subordinate and superordinate action identifications when describing the activities of students of similar (similar targets) and different (dissimilar targets) classes, respectively. Aside from temporal, spatial, and social distances, hypotheticality affects psychological distance—and therefore, an improbable event would seem more distant than a probable event would (Wakslak, Trope, Liberman, & Alony, 2006). In short, different dimensions of psychological distance affect mental construal—and these construals guide prediction, evaluation, and behavior (Trope, Liberman, & Wakslak, 2007). All of these are based on high-level construal as psychological distance increases. Nussbaum et al. (2006) studied the manner by which temporal distance influences the confidence of predicting future outcomes. They found that temporal distance enhances confidence when derived from a high-level construct. Concerning behavior, especially purchasing behavior, in the contexts of proximal distance and time, consumers form more concrete mental construals and focus on contextualized benefits—which, in turn, induces higher purchasing willingness (Kenny & Marshall, 2000; Luo, Andrews, Fang, & Phang, 2014). For instance, Luo et al. (2014) examined mobile deal messages via SMS and found that temporal or spatial proximal messages induce concrete construal level from consumers, which leads to higher purchase intention.

Besides studying the main effect of psychological distance on individuals' construal levels, the value of fit between the level of events and messages and the provided distances is also examined. Studies have found that consumers' evaluations would be enhanced when the type of events and messages fits their mental construal which are influenced by the relative level of distance. For example, it has been demonstrated that the persuasion of a political message is enhanced when message concreteness is congruent with the temporal distance towards the election (Kim, Rao, & Lee, 2009). Multiple distances could also co-exist when individuals evaluate the events. When multiple distance dimensions interact with each other to form construal levels of events and messages, consumers' evaluations follow a subadditive rule which is suggested by the Weber-Fechner law (Dehaene, 2003). It states a diminishing sensitivity of human perception of distances. Consumers would have low-level construal only when both dimensions of distance are proximal. When either or both dimensions of distance is/are distant, consumers would have high-level construal (Kim, Zhang, & Li, 2008). Evidence has been revealed in product review contexts, such as the joint effect of temporal and social distances on the relationship between product review concreteness and its helpfulness (Tan, Huang, Ke, & Wei, 2018).

HYPOTHESES DEVELOPMENT

The present study examines how the message type and its interaction with two perceived contextual cues from the dimension of temporal distances (i.e., message promotional time and deal expiration time) between consumers and social media communication affect the purchasing intention of consumers. The thesis is that consumers' purchase intention is influenced by the concreteness of the promotional message and its congruency with one of the temporal cues presented in that message.

According to CLT literature, when consumers focus on the contextualized details of the events, doing so eventually leads to higher purchasing willingness (Kenny & Marshall, 2000; Luo, Andrews, Fang, & Phang, 2014). Thus, concrete messages—which allow consumers to concentrate on the contextualized details of such messages—potentially induce higher purchase intentions as compared with abstract messages. Moreover, concrete messages enable consumers to perceive more informative cues in order to reduce ambiguity in decision-making (Hansen & Wanke, 2010). Message concreteness has been found to positively influence consumers' evaluations, as shown in the existing literature. For instance, product review concreteness is positively related to its helpfulness (Tan, Huang, Ke, & Wei, 2018). Message concreteness also positively affects message persuasiveness in health communication (Pounders, Lee, & Mackert, 2015).

Under the context of communicating promotional messages in microblogging sites, concrete messages could evoke a clear image of the promoted product—making it easier for consumers to evaluate it, which eventually induces consumers to access the deal page and purchase the product. Therefore, message concreteness should influence higher purchase intentions towards the promoted product.

H1: The content concreteness of promotional messages results in higher purchase intention.

As with other dimensions of psychological distance, temporal distance influences consumers' evaluations of the events by altering representations of those events (Trope & Liberman, 2003). Proximal temporal distance enables an individual to generate a low-level construal of an event, whereas far temporal distance enables a high-level construal of an event (Trope & Liberman, 2003). Given that increasing temporal distance raises construal level, it affects consumer evaluation (Trope, Liberman, & Wakslak, 2007). For instance, real-time coupons increase targeted consumers' purchase amounts (Heilman, Nakamoto, & Roa, 2002) and induce more unplanned spending in grocery stores (Hui, Inman, Huang, & Suher, 2013). Consumers who receive mobile promotional messages at a time closer to their shopping visits experience higher involvement with the promotions and are more likely to have higher purchase intentions (Luo, Andrews, Fang, & Phang, 2014). The congruency of temporal distance and message concreteness has also been studied. For example, the fit between proximal temporal distant and concrete reviews enhances the perceived helpfulness of reviews (Tan, Huang, Ke, & Wei, 2018). The congruency of message concreteness and temporal distance towards the election enhances the persuasion of the political message (Kim, Rao, & Lee, 2009).

For the context of this study, two possible temporal cues—which are message promotional time and deal expiration time—could be presented along with the message. Consumers possibly process these two temporal distances and generate a correspondingly high or low level of construal of the message. Besides, consumers' purchase intentions are enhanced when there is a match between message concreteness and temporal distance (i.e., consumers' purchase intentions are enhanced for concrete messages when both message promotional time and deal expiration time are proximal). However, the nature of the context needs to be taken into consideration when studying the joint effects of different psychological distances (Liberman, Trope, & Wakslak, 2007). Earlier research under the context of promotional messages revealed that proximal temporal distance can have a detrimental effect on consumers' purchase intentions (Luo, Andrews, Fang, & Phang, 2014). On a microblogging site, consumers read older messages by scrolling down the screen. Through scrolling down, message posting time could be reflected and processed first by consumers. When a promotional message with proximal posting time is available, it triggers consumers' low-level construals; and its congruency with concrete messages potentially leads to higher purchase intentions (Luo, Andrews, Fang, & Phang, 2014). Distant expiration time allows consumers enough time to plan and act accordingly on a deal's web page. However, when message promotional time and deal expiration time are both proximal, it leaves too little time for consumers to plan; and they may be reluctant to process contextualized details of the message. The congruency effect between concrete message and proximal temporal

distances diminishes. Under the condition of distant promotional time and proximal expiration time, consumers could construe the message at a high level and focus on the "why" features of the message (Trope & Liberman, 2003). However, proximal expiration time—which indicates time pressure for consumers—provides a strong positive signal as to the value of the deal (Eisenbeiss, Wilken, Skiera, & Cornelissen, 2015). This positive signal from the tight time constraint could be enhanced only if the message confirms it by its strong contextualized details (Shen, 2013). Thus, concrete messages could induce higher purchase intentions under such conditions.

H2: Compared with an abstract message, a concrete message induces higher purchase intentions under the conditions of proximal promotional time and distant expiration time, or distant promotional time and proximal expiration time.

RESEARCH METHODOLOGY

We employed a 2 (message concreteness: concrete/low-level [how]; abstract/high-level [why]) x 2 (temporal distance towards promotional time: recent past; distant past) x 2 (temporal distance towards deal expiration time: near future; distant future) between-subject vignette experiment in order to test the hypotheses. The experimental vignette method allows researchers to present participants with carefully constructed and realistic scenarios, where independent variables are manipulated in order to assess participants' intentions and behaviors through survey questions (Aguinis & Bradley, 2014). Thus, it has been widely used in various studies, such as in studies of information systems (Siponen & Vance, 2010) and marketing (Haisley & Loewenstein, 2011).

Stimulus

Participants were provided a deal message posted by a fictional group-buying website on the microblogging site. To minimize participants' potential bias towards particular group-buying websites, the author used a neutral name for the website: "Group-Buying Website." A coupon for half-priced movie tickets was used as the deal. Participants can buy this coupon with 1 Yuan[2] and redeem it in any Wanda cinema (a popular cinema operator; its cinemas are available in most cities in China) to purchase any movie tickets they like for half price. This deal was selected in the study for the following reasons: First, the coupon for half-priced movie tickets is one of the most common group-buying deals in China (Liu & Sutanto, 2012). Second, participants' different perceptions of the same price could be mitigated. Participants could decide how expensive the movie tickets they want to purchase when they would redeem the coupons in the cinemas. To manipulate message concreteness, the message content was varied the message content by drawing on prior research (Trope & Liberman, 2003; Kim, Rao, & Lee, 2009). The concrete/low-level message ("Purchase this coupon for 1 Yuan. Click the following link to access the deal page. After payment, you can present the coupon or show the QR code in any Wanda cinema to enjoy a 50% discount for any movie ticket, including both 2D and 3D movies. Multiple purchases are allowed. Offer ends [at midnight / in 10 days].") included detailed information regarding the deal and stressed the "how" features of the deal. The abstract/high-level message ("Purchase this coupon for 1 Yuan to enjoy a 50% discount for any movie ticket. Do not miss this valuable deal. Offer ends [at midnight / in 10 days].") included non-concrete information regarding the deal and stressed the "why" features. To manipulate temporal distance towards deal expiration time, the author chose "at midnight" as the near future condition and "in 10 days" as the distant future condition, since group-buying deals usually have limited promotional time ranging from one day to a few days. To manipulate temporal distance towards promotional time, the author chose "10 minutes ago" as the recent past condition and "10 hours ago" as the distant past condition. Figure 1 illustrates the messages shown to the participants in each treatment.

Participants and Procedures

Participants with microblogging sites experience were randomly assigned to one of the eight treatment groups in the experiment. Participants were first asked to read the background information regarding posting deal messages on microblogging site by group-buying websites; and were asked to read one of the eight messages which included the content, posting time, and deal expiration time. This message appeared after scrolling down the screen on the microblogging site for the participants under the treatments of distant message promotional time. Then, the participants responded to a series of multi-items of measurements regarding their purchase intention, which was followed by their perceptions towards message concreteness, message posting time, and deal expiration time. Seven-point Likert scale from 1 ("Strongly disagree") to 7 ("Strongly agree") was applied for these measurement items. After providing their evaluations, participants were complete several demographic questions and questions regarding their experience of microblog usage and group-buying. Lastly, they were asked to indicate their impulse purchase intention and attitude towards watching a movie in the cinema. Table 1 shows the items of these survey constructs. 499 valid responses were obtained, and the characteristics of the respondents across eight treatment groups are shown in Table 2. Concerning the deal expiration time, the author has ensured that the participants, under the treatment of either the proximal expiration time (today) or the distant promotional time (10 hours ago), answered the survey in the afternoon or the evening, which ruled out the possibility of seeing an expired promotion.

DATA ANALYSIS AND RESULTS

First, ANOVA analysis was performed in order to identify any potential bias concerning participants' microblogging and group-buying experience across the groups. It has been found that there is a lack of significant difference for the participants across these 8 scenarios regarding their microblogging usage experience (in years, $F = 0.25$, $p > 0.1$), microblogging usage experience (frequency, $F = 1.20$, $p > 0.1$), and group-buying experience (in years, $F = 1.37$, $p > 0.1$). Factor analysis was performed on measurement variables, and the results of reliabilities and validities are indicated in Table 3. The values of Cronbach's alpha and composite reliability, all of which are greater than 0.75, indicate

Figure 1. Messages in each treatment (translated from Chinese into English)

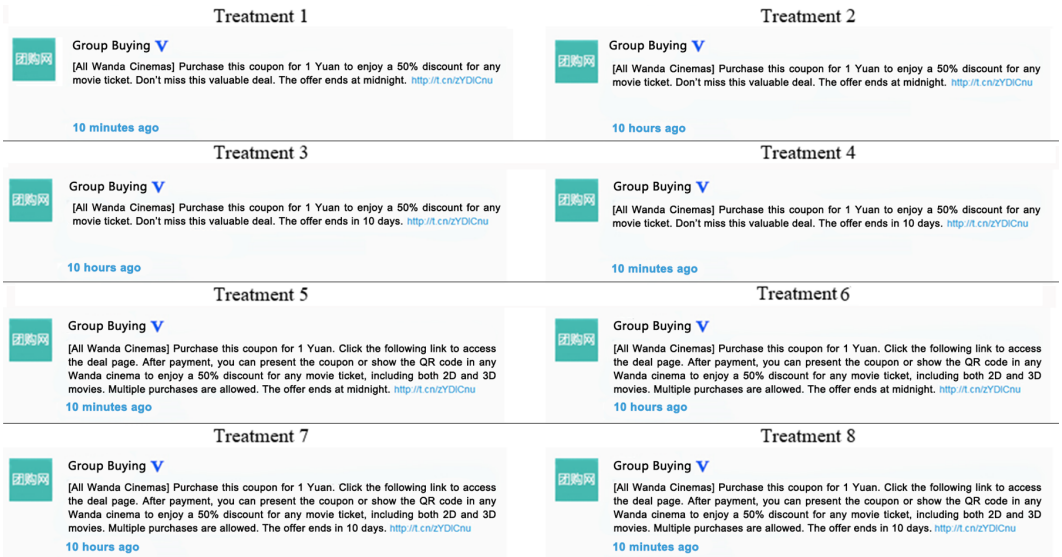


Table 1. Survey constructs

Construct	Measurement Items	References
Message Concreteness (MC)	1: The message content emphasizes details. 2: The message content emphasizes process. 3: The message content emphasizes how to purchase the deal.	Developed based on Trope and Liberman (2010)
Promotional time (PT)	1: The time when this message was posted is close to you. 2: This message was posted just now. 3: This message was not posted for long time.	Developed based on Trope and Liberman (2003, 2010)
Expiration Time (ET)	1: The expiration time of this deal is close to you. 2: This deal will expire soon. 3: This deal will expire in a short time.	Developed based on Trope and Liberman (2003, 2010)
Purchase Intention (PI)	1: It is likely that I will consider purchasing the deal in the message. 2: I am willing to purchase the deal in the message. 3: It is likely that I will purchase the deal in the message.	Adapted from Everard and Galletta (2006)
Purchase Impulsiveness (PM)	1: I buy things I did not plan to buy. 2: I buy things which are unplanned. 3: Besides the things I plan to buy, I also buy other things.	Adapted from Luo et al. (2014)
Movie Attitude (MA)	1: I like buying movie tickets. 2: I often buy movie tickets. 3: I always buy movie tickets.	Adapted from Limayem et al. (2007)

satisfactory reliabilities for all these constructs (Fornell & Larcker, 1981). The validity of these constructs is also established, since the values of Average Variance Extracted (AVE) are above 0.50 and the square roots of the AVE are greater than any of the inter-construct correlations (Fornell & Larcker, 1981). Unstandardized Latent Variable scores for each measurements variable are calculated based on unstandardized outer weights, which are used for manipulation checks and hypothesis testing.

Manipulation Checks

Manipulation checks were performed in order to examine whether the participants perceived the messages as had been intended. Table 4 shows the results of Independent Samples T-Test. The results suggest that successful manipulations of message concreteness, message promotional time, and deal expiration time are ensured.

Hypotheses Testing

Table 5 shows the descriptive statistics of purchase intention for each treatment group.

To test the hypotheses, the author firstly ran one-way ANCOVA analysis in order to compare participants' purchase intention based on message concreteness. Participants' Movie Attitude and Purchase Impulsiveness were used as the covariate in the analysis. The results indicated that message concreteness had a significant effect on purchase intention ($F(1,495) = 15.45$, $p < 0.001$). Comparing the estimated marginal means showed that concrete messages (mean = 5.42, $\sigma = 0.06$) induce higher purchase intention as compared with the effect of abstract messages (mean = 5.05, $\sigma = 0.06$). Thus, H1 is supported. One-way ANCOVA analysis to compare participants' purchase intention based on message promotional time was also performed. The results revealed a significant effect of promotional time on purchase intention ($F(1,495) = 3.02$, $p < 0.10$). Proximal promotional time (mean = 5.32, $\sigma = 0.65$) induces higher purchase intention as compared with distant promotional time (mean = 5.16, $\sigma = 0.66$). One-way ANCOVA analysis to compare participants' purchase intention based on deal expiration time revealed no significant effect ($F(1,495) = 2.49$, $p > 0.10$). Two-way ANCOVA analysis was performed in order to compare participants' purchase intention while controlling for participants' movie attitudes and purchase impulsiveness. No interaction effect has been found

Table 2. Sample characteristics

		Treatment 1	**Treatment 2**	**Treatment 3**	**Treatment 4**	**Treatment 5**	**Treatment 6**	**Treatment 7**	**Treatment 8**
Message Concreteness		Abstract	Abstract	Abstract	Abstract	Concrete	Concrete	Concrete	Concrete
Promotional time		Proximal	Distant	Distant	Proximal	Proximal	Distant	Distant	Proximal
Expiration Time		Proximal	Proximal	Distant	Distant	Proximal	Proximal	Distant	Distant
Sample Size		62	59	63	62	64	60	65	64
	Items	**Mean (SD)/ Frequency**	**Mean (SD)/ Frequency**	**Mean (SD)/ Frequency**	**Mean (SD)/ Frequency**	**Mean (SD)/ Frequency**	**Mean (SD)/ Frequency**	**Mean (SD)/ Frequency**	**Mean (SD)/ Frequency**
Age		29.52(5.95)	32.44(6.75)	31.33(7.50)	33.39(8.24)	31.80(6.34)	32.07(8.58)	33.66(8.27)	32.22(7.45)
Gender	Male	27	26	29	29	31	27	34	34
	Female	35	33	34	33	33	33	31	30
Microblog usage experience (in years)	Less than 1 year	1	0	1	1	1	1	2	1
	1 year	2	0	3	2	1	2	2	3
	2 years	11	11	10	16	12	10	8	10
	3 years	23	24	16	16	21	19	25	16
	4 years or more	25	24	33	27	29	28	28	34
Microblog usage experience (frequency)	Always stay online	7	8	7	2	5	10	8	9
	Many times each day	24	19	15	25	32	17	18	24
	Once or twice each day	19	19	20	19	17	21	24	19
	A few times each week	11	13	21	13	10	10	13	11
	A few times each month	1	0	0	3	0	2	2	1
Group-buying experience (in years)	Less than 1 year	7	5	5	10	4	8	8	9
	1 year	9	8	8	10	7	9	7	9
	2 years	23	21	17	21	27	17	21	13
	3 years	18	15	10	12	17	15	15	17
	4 years or more	5	10	23	9	9	11	14	16

between message concreteness and promotional time ($F(1,493) = 0.40$, $p > 0.10$), between message concreteness and deal expiration time ($F(1,493) = 0.00$, $p > 0.10$), or between message promotional time and deal expiration time ($F(1,493) = 2.51$, $p > 0.10$).

We ran three-way ANCOVA analysis to compare participants' purchase intention based on three manipulations while controlling for participants' movie attitude and purchase impulsiveness. They are message concreteness, message promotional time, and deal expiration time. The results revealed a significant interaction effect among message concreteness, message promotional time, and deal expiration time ($F(1,489) = 4.15$, $p < 0.05$). The author then ran two-way ANCOVA analysis separated by each manipulation. First, two-way ANCOVA analysis between message promotional time and deal expiration time was performed for concrete and abstract messages separately. The results, as shown in Figure 2, revealed a significant interaction effect between message promotional time and the deal expiration time for concrete messages ($F(1,247) = 7.03$, $p < 0.01$). No significant interaction effect between message promotional time and deal expiration time was found for abstract messages ($F(1,240) = 0.05$, $p > 0.10$).

Table 3. Factor loadings, reliability, and validity of constructs

Construct	Item	Loading	Cronbach's alpha	Composite Reliability	Average Variance Extracted	MC	PT	ET	PI	PM	MA
Message Concreteness (MC)	MC1 MC2 MC3	0.803 0.802 0.850	0.754	0.859	0.670	0.819					
Promotional time (PT)	PT1 PT2 PT3	0.919 0.894 0.872	0.877	0.924	0.801	0.203	0.895				
Expiration Time (ET)	ET1 ET2 ET3	0.927 0.868 0.815	0.864	0.904	0.759	0.060	0.151	0.871			
Purchase Intention (PI)	PI1 PI2 PI3	0.897 0.910 0.886	0.879	0.925	0.805	0.383	0.255	0.055	0.897		
Purchase Impulsiveness (PM)	PM1 PM2 PM3	0.880 0.911 0.851	0.855	0.912	0.776	0.222	0.113	0.142	0.365	0.881	
Movie Attitude (MA)	MA1 MA2 MA3	0.897 0.910 0.886	0.850	0.908	0.768	0.207	0.138	0.068	0.438	0.274	0.876

Table 4. Manipulation check results

Manipulation	Level	Sample Size	Mean (SD)	Independent Samples T-Test
Message Concreteness	Abstract Concrete	246 253	4.48 (1.18) 5.40 (0.85)	$t(446) = -9.95$, $p<0.001$
Message Promotional time	Distant Proximal	247 252	4.10 (1.51) 5.64 (0.91)	$t(402) = -13.83$, $p<0.001$
Deal Expiration Time	Distant Proximal	254 245	3.39 (1.43) 5.14 (1.11)	$t(476) = -15.27$, $p<0.001$

Table 5. Descriptive statistics

Message Concreteness	Message Promotional time	Deal Expiration Time	Mean (SD) of Purchase Intention
Abstract	Distant	Distant	5.02(1.33)
		Proximal	4.88(1.27)
	Proximal	Distant	5.03(1.30)
		Proximal	5.12(1.28)
Concrete	Distant	Distant	5.28(1.14)
		Proximal	5.46(1.10)
	Proximal	Distant	5.70(0.95)
		Proximal	5.38(1.08)

Secondly, two-way ANCOVA analysis between message promotional time and message concreteness was performed for proximal and distant deal expiration time, separately. The results, as shown in Figure 3, revealed a significant interaction effect between message concreteness and promotional time for proximal expiration time ($F(1,239) = 3.25$, $p < 0.10$). No significant interaction effect between message concreteness and promotional time was found for distant expiration time ($F(1,248) = 0.93$, $p > 0.10$).

Thirdly, two-way ANCOVA analysis between deal expiration time and message concreteness was performed for proximal and distant message promotional time, separately. As shown in Figure 4, no significant interaction effect has been revealed between message concreteness and deal expiration time for either proximal message promotional time ($F(1,246) = 2.02$, $p > 0.10$) or distant message promotional time ($F(1,241) = 2.06$, $p > 0.10$).

Simple effect analysis revealed further insights. Under the condition of proximal expiration time and distant promotional time, participants' purchasing intention was significantly higher ($F(1,115) = 10.12$, $p < 0.01$) for concrete messages (mean = 5.48, $\sigma = 0.14$) as compared with abstract messages (mean = 4.87, $\sigma = 0.14$). Under the condition of proximal promotional time and distant expiration time, participants' purchasing intention was significantly higher ($F(1,122) = 8.10$, $p < 0.01$) for concrete messages (mean = 5.60, $\sigma = 0.11$) as compared with abstract messages (mean = 5.13, $\sigma = 0.12$). No significant effect of message concreteness on purchase intention has been found for proximal promotional time and expiration time ($F(1,122) = 0.39$, $p > 0.01$) or for distant promotional time and expiration time ($F(1,124) = 1.61$, $p > 0.01$). Thus, H2 is supported.

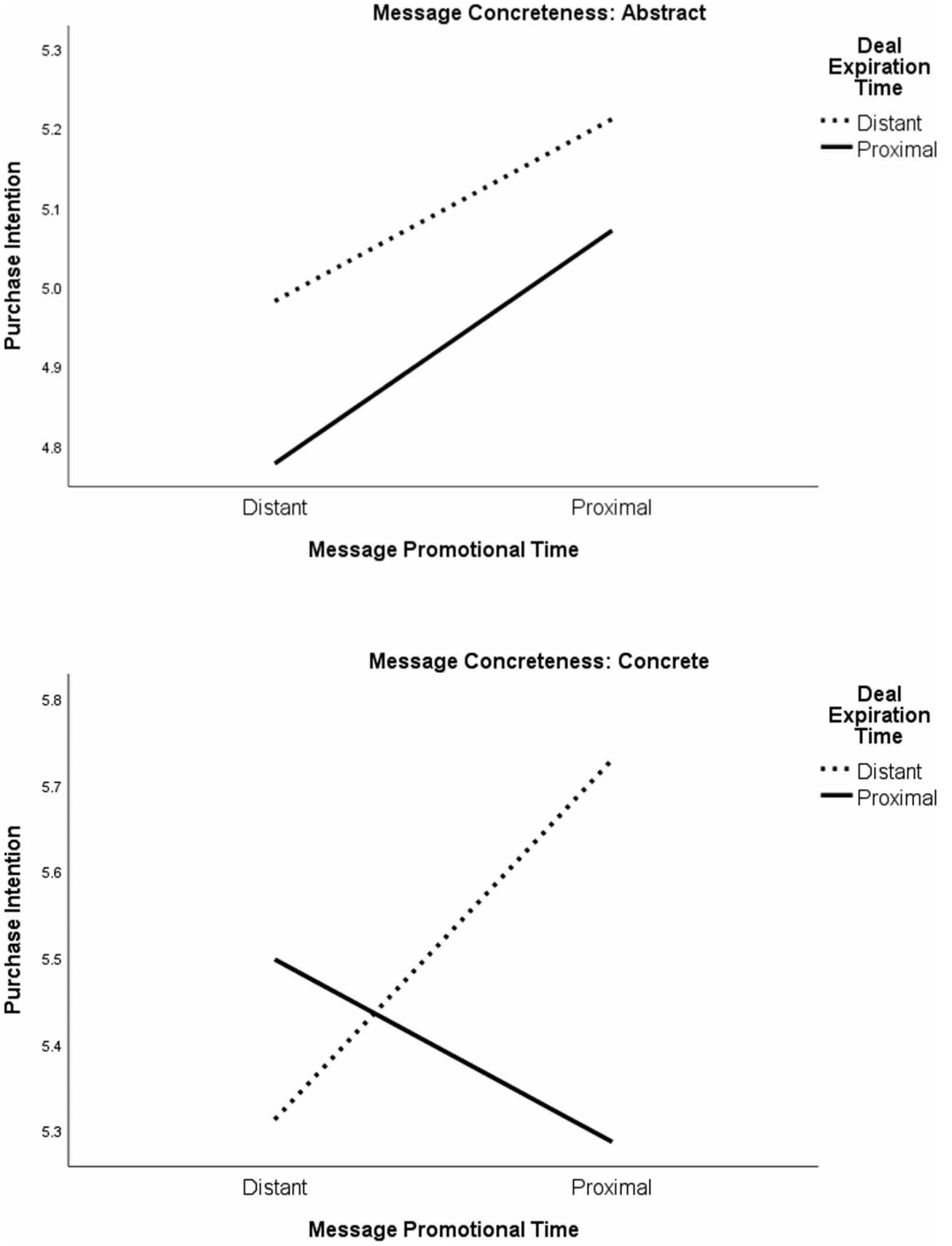
DISCUSSION

To answer the question of how social media can be integrated into daily commercial activities, this study investigated how message concreteness and its interactions with two temporal cues (i.e., message promotional time and deal expiration time) affects the purchase intentions of consumers. Based on CLT, social media communications should increase consumers' purchase intentions towards the promoted product for concrete messages and its congruency with either of the temporal cues. The author found that message concreteness leads to higher purchase intention. When interacting with message promotional time and deal expiration time, further insights have been obtained. Specifically, as compared with abstract messages, concrete messages could lead to higher purchase intention under the condition of proximal promotional time and distant deal expiration time, and under the condition of distant promotional time and proximal deal expiration time.

Limitations and Suggestions for Future Research

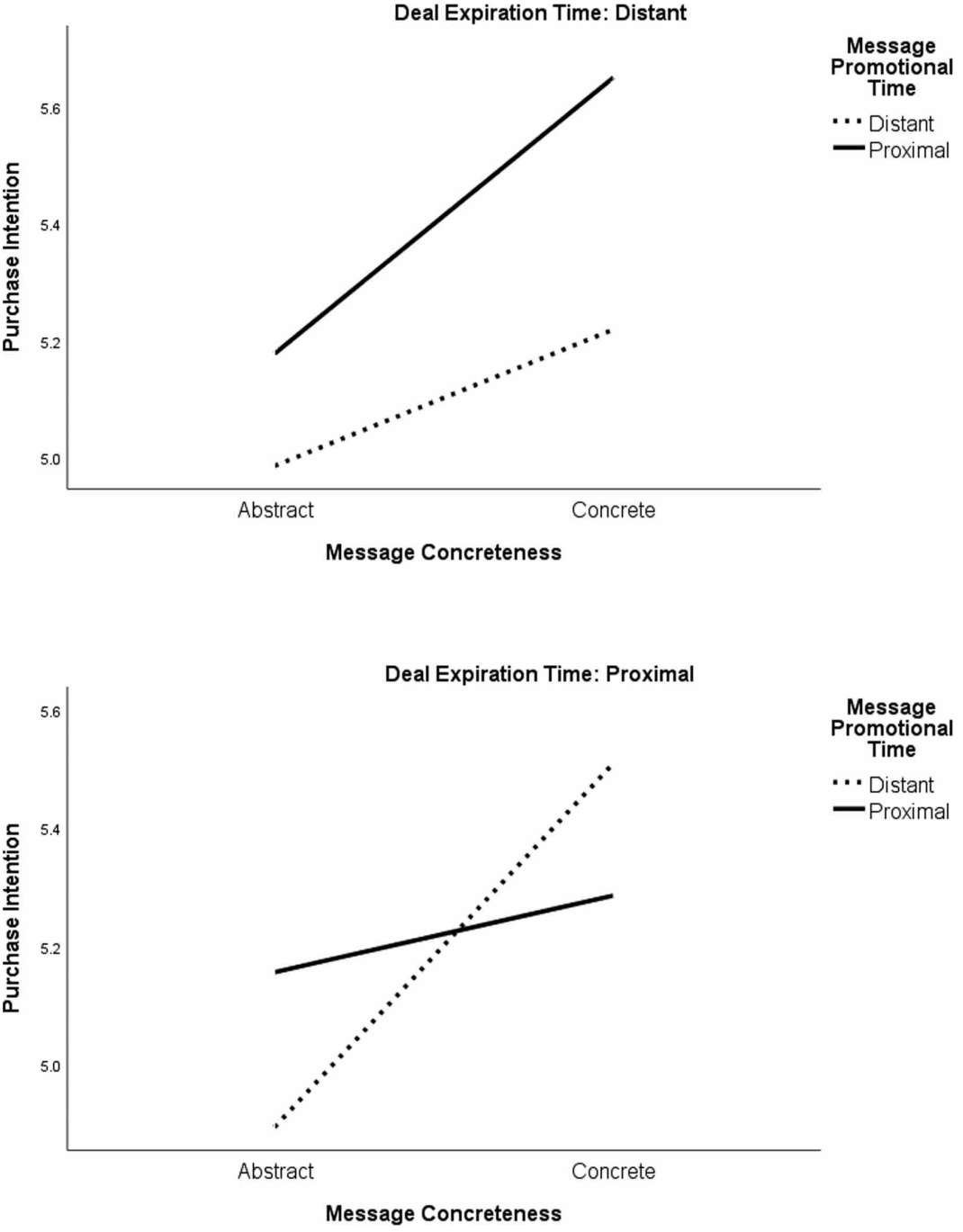
Although this study design allows the author to obtain subjective data from consumers and examine psychological mechanisms, consumers' actual behaviors toward promotional messages and promoted deals could also be affected by other factors. For instance, group-buying deals have short feature times and very deep discounts, which could influence consumer purchasing behaviors after receiving the promotional messages. Future research could investigate the generalizability of the findings beyond the group-buying context. In this study, the author did not show the messages on the microblogging site on which subjects can also see other neighboring messages. These neighboring messages could contain similar promotional messages from other group-buying merchants and could affect consumer purchasing behaviors. Also, the number of these neighboring messages between temporally proximal messages and temporally distant messages (based on message promotional time) could affect consumers' perception of temporal distance. Thus, future research could examine this through collaborations with microblogging sites. Although the author has controlled consumers' purchase impulsiveness and their attitudes towards buying movie tickets, other relevant factors could include consumers' regulatory focus (Lee, Keller, & Sternthal, 2010) and the devices used for accessing the messages (Luo, Andrews, Fang, & Phang, 2014), which could also affect users' perceptions towards

Figure 2. Interaction effects, separated by message concreteness



the promotional messages. Also, besides deal expiration time, coupon redemption time could also be an essential temporal cue that consumers may want to take into account when making their decisions. Future studies could further examine this by considering the above factors.

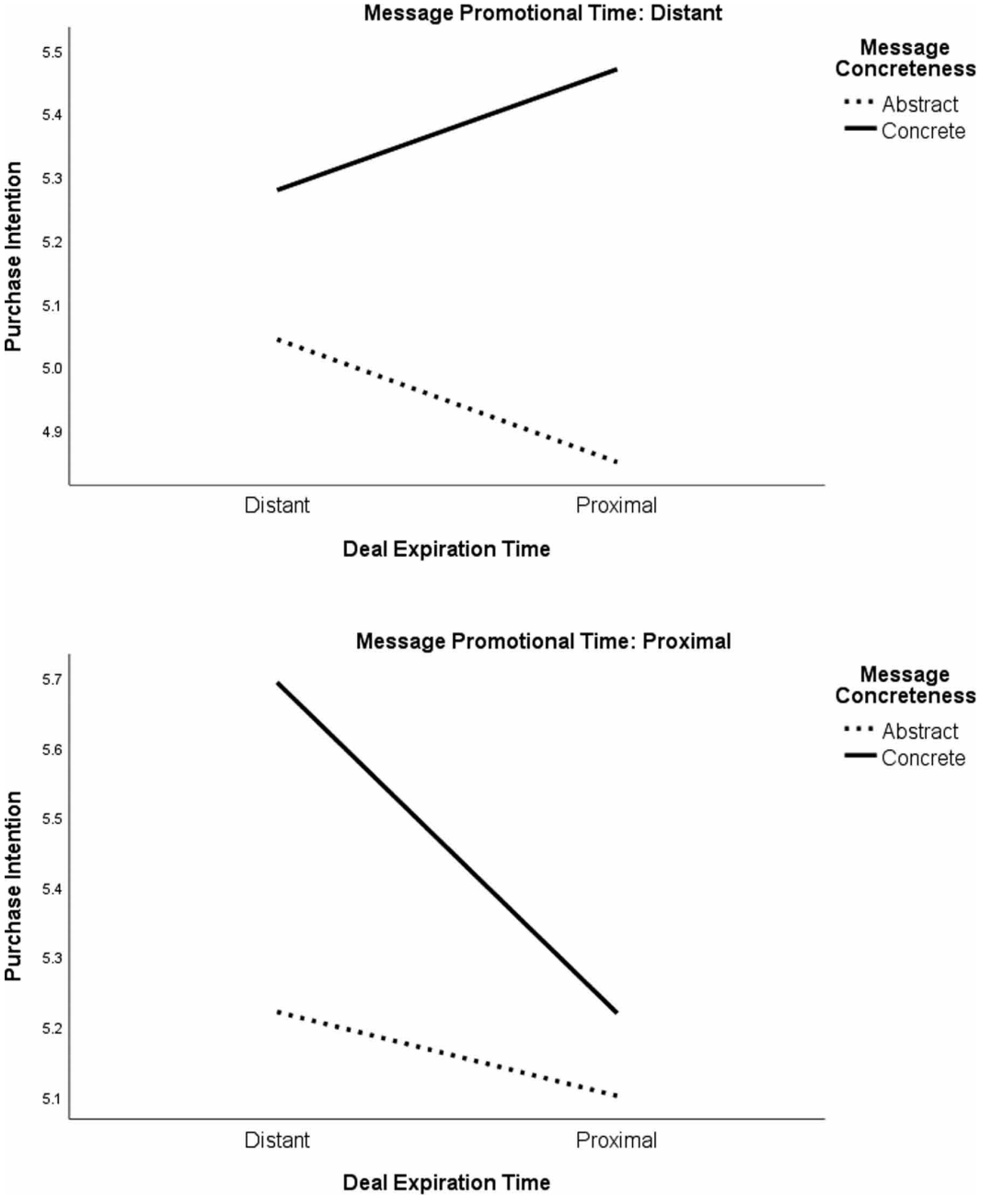
Figure 3. Interaction effects, separated by deal expiration time



Theoretical Contributions

Notwithstanding its limitations, this study offers several contributions to both relevant theory and the extant literature.

Figure 4. Interaction effects, separated by message promotional time



Firstly, this study enriches the CLT literature through examining multiple contextual cues/distances from the same dimension of psychological distance. Previous CLT studies have investigated the effects of fit/congruency between message concreteness and one dimension of psychological distance (Kim, Rao, & Lee, 2009), and between message concreteness and two dimensions of psychological distance (Zhao & Xie, 2011; Tan, Huang, Ke, & Wei, 2018). However, there could be more than one contextual cue from a single dimension presented to individuals when they perceive an event. Thus,

this study advances the understanding of how two types of temporal distances influence consumers' purchase intentions within the context of promotion communication in social media. The results provide a deeper empirical understanding of the joint effects of these two types of temporal distance.

Secondly, this study enriches social media literature. Although social media is attracting more attention from the industry, empirical studies—especially theoretical framework-anchored studies—are still lacking. This study relies on the theory of CLT to explain the social media phenomenon. Moreover, existing social media literature mainly focuses on user-generated social media content, such as consumer reviews of products (Chen & Xie, 2008; Chevalier & Mayzlin, 2006) and consumer-generated ratings (Moon, Bergey, & Iacobucci, 2010; Ye, Law, & Gu, 2009). Studies on how to use social media communication for promotion purposes are still limited (Goh, Heng, & Lin, 2013). The current study extends the investigation of the value of merchant-generated social media content and measures the effects that social media communication conducted by merchants has on the purchase intentions of consumers. This study contributes to the social media research by demonstrating that using CLT as a theoretical lens can be useful in explaining the impact of messages that are posted on social media sites.

Third, this study contributes to the group-buying literature. The daily-deal group-buying phenomenon has attracted researchers from different fields, such as information systems (Liu & Sutanto, 2012; Zhou, Xu, & Liao, 2013) and marketing (Kumar & Ranjan, 2012). The optimization of sales performance, which is measured by the number of sold coupons, is a central topic in this area. This study has extended the literature on group-buying studies to include social media platforms, in order to examine the effects of social media promotion on potential sales. By integrating social media and group-buying, studies on group-buying can attract a broader audience and offer even more valuable implications.

Practical Contributions

This study reveals that social media content with different levels of concreteness and expiration times, which are communicated at various periods, could affect consumers' purchase intentions towards the promoted product differently—and that this, in turn, subsequently affects the effectiveness of social media promotion. Existing studies on social media provide evidence of the effects of information richness and sources of communication (whether user or merchant) on merchants' sales performance (Goh, Heng, & Lin, 2013). However, they do not offer guidance as to when and how to communicate promotional messages on social media sites. Merchants can engage with their consumers through different social media accounts at different periods, and the findings provide guidelines for online merchants, especially group-buying merchants, for how to effectively do this. The author finds that it is better for merchants to post concrete promotional messages—each with a distant deal expiration time—at a time when most of the followers are active (during daytime hours) on the microblogging site, which enables these followers to read the message in real-time. Additionally, it is also better to post concrete messages—each with a proximal deal expiration time—at a time when most of the followers are not active (late night; early morning), which enables these followers to read the message after a specified period. The above suggestions would allow merchants to optimize their value realization against social media efforts (Mangold & Faulds, 2009). To summarize, the main points of this study is shown in Table 6.

Table 6. Summary of this study

Research Gap and Objective	How merchants can successfully communicate on social media remains unclear. Anchoring on CLT, consumers' evaluations towards the messages could be strengthened when their construal of the messages is congruent with the contextual cue from one of the four dimensions of psychological distance. However, the interaction of message concreteness with two contextual cues from the same dimension has not been investigated. This study aims to investigate how message concreteness—and its interactions with two temporal cues (message promotional time and deal expiration time)—affects consumers' purchase intentions.
Context and unit of analysis	It studies individual consumers' purchase intentions towards the deals communicated by group-buying merchants on a microblogging site.
Hypotheses	H1: The content concreteness of promotional messages results in higher purchase intention. H2: Compared with an abstract message, a concrete message induces higher purchase intention under the conditions of proximal promotional time and distant expiration time, or distant promotional time and proximal expiration time.
Research method	A 2 (message concreteness: concrete/low-level; abstract/high-level) x 2 (temporal distance towards promotional time: recent past; distant past) x 2 (temporal distance towards deal expiration time: near future; distant future) between-subject vignette experiment was employed. 499 participants provided valid responses.
Findings	Concrete messages lead to higher purchase intention. Through interacting message concreteness, message promotional time, and deal expiration time, the author shows that the congruency of a concrete message with either temporal cue (but not both temporal cues) lead to higher purchase intention. Compared with abstract messages, concrete messages could lead to higher purchase intention under the condition of proximal promotional time and distant deal expiration time, and the condition of distant promotional time and proximal deal expiration time.
Theoretical contribution	This study contributes to the CLT literature by investigating multiple contextual cues from the same dimension of psychological distance and their interactions with message concreteness. It also enriches the social media and group-buying literature.
Practical contribution	It provides insights for online merchants on effectively communicating promotional messages to consumers through their social media accounts. It is best to post concrete deal messages with a distant deal expiration time at a time when most of the followers are active; or to post concrete deal messages with a proximal deal expiration time at a time when most of the followers are not active.
Limitations and future research opportunities	Firstly, deals have short feature times and offer very deep discounts within a group-buying context. Future research could explore the generalizability of these findings beyond the group-buying context. Secondly, deal messages were shown to the participants without their neighboring messages. Future research could collaborate with microblogging sites to study how neighboring social messages influence consumers' purchase intentions. Thirdly, future studies could further examine consumers' purchase intentions by considering other factors, such as consumers' regulatory focus and devices used for accessing the messages. Moreover, other temporal cues associated with the deal messages (such as coupon redemption time) could also be explored.

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ENDNOTES

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2 Yuan refers to Chinese Yuan currency.

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