Let the Comments Fly: The Effects of Flying Commentary Presentation on Consumer Judgment

Research-in-Progress

Yi Shen
National University of Singapore
13 Computing Drive, Singapore 117417
shenyi@comp.nus.edu.sg

Hock Chuan Chan
National University of Singapore
13 Computing Drive, Singapore 117417
chanhc@comp.nus.edu.sg

Iris W. Hung
National University of Singapore
15 Kent Ridge Drive, Singapore 119245
iris.hung@nus.edu.sg

Abstract

Affect often influences consumers' evaluative judgment. Not much is known about whether and how affect may play a role in human-computer interaction. This research intends to empirically evaluate an affect-eliciting design feature (i.e., danmaku commentary presentation), and examine its effects on consumers' evaluative judgment. Drawing on the affective response model, we hypothesize that danmaku (vs. separate) commentary presentation system may elicit more pleasant and exciting video watching experience, which in turn influence consumers' judgmental evaluations. We further investigate whether the impact of commentary presentation systems on evaluative judgment may be contingent upon sentiment divergence of comments, consumer involvement and consumer metamotivational state. We describe an experiment design for testing the hypotheses, and discuss the potential theoretical and practical implications of this study.

Keywords: Affect, Human-computer interaction, Social media, Interface design

Introduction

The digital advertising ecosystem is rapidly evolving in recent years. It is predicted that the spending on online video advertising in the US has exceeded 4 billion in 2013, and will reach 12 billion in 2018 (Business Insider 2014). Furthermore, advertisers are continuously adapting to new platforms, devices, and ad formats. For instances, advertisers are increasingly leveraging social media platforms (Mangold and Faulds 2009; Weinberg and Pehlivan 2011), because it enables consumers across the globe to view and post product-related comments, which exert considerable social influence on future consumers (Chevalier and Mayzlin 2006; Forman et al. 2008). Furthermore, modern consumers are increasingly consulting peer opinions rather than merchants or advertisers for information pertaining to their purchase decisions (Bickart and Schindler 2001). The emergence of social media has also facilitated the development of word-of-mouth (WOM) as a form of peer opinions, which is actively contributed by consumers and accessible globally via online channels (Hennig-Thurau et al. 2004).

One emerging form of such user-generated content is a real-time commentary system called *danmaku*, which enables users to view and add commentary subtitles on videos. The most notable feature of *danmaku* video sharing websites is scrolling marquee comments, which are overlaid directly onto the video, and synchronized to a specific playback time. Such comments are displayed as streams of moving subtitles overlaid on the video playback screen, visually resembling a *danmaku* (literally bullets in Japanese) shooter game. Thus, the real-time commentary subtitle system is named *danmaku* or bullet curtain. Unlike traditional video sharing sites (e.g., Youtube.com) where user-generated comments appear in a separate space outside the video, *danmaku* video sharing sites enable comments on a video to be simultaneously broadcasted to all viewers in real (video) time. This allows users to view comments in synchronization with the video, and to write their own comments. Once users send comments, the comments immediately appear on the video, usually moving from right to left on the screen. *Danmaku* keeps all user comments in a separate comments pool near the video as well, but it selects the latest comments to be displayed on the video playback screen, preventing potential overloading of comments on the screen. Therefore, the *danmaku* system enables users to communicate with each other in novel ways, creating a sense of shared watching experience. However, *danmaku* might also be perceived as a source of distraction and interference, because it might direct users' attention away from the primary task of video watching to comments reading. To alleviate the possible annoyance resulting from *danmaku*, the system offers users various subtitle editing tools, including style, format, and movement, to customize the setting of the "flying" comments. Table 1 summarizes the key differences between *danmaku* and separate commentary presentation systems. The difference in terms of location and timeline implies that users of a *danmaku* video sharing site would typically view and comprehend the peers' comments while watching the video, whereas users of a tradition video sharing site with separate commentary presentation may read the comments before or after watching the video.

Table 1. *Danmaku* vs. Separate Commentary Presentation System		
	Danmaku	Separate Commentary
Location of comments	Displayed as streams of moving subtitles overlaid on the video playback screen	Displayed in a separate space near a video
Timeline of comments	Broadcasted to viewers in real time, or synchronized to video time	May engage audience with timeline commenting and tagging
Examples	Niconico.jp, acfun.com, bilibili.tv	Youtube.com, viddler.com

As a potential new conduit for online video advertising, *danmaku* system raises an important question of under what conditions commentary presentation systems (*danmaku* vs. separate commentary) influence consumers' evaluative judgments. More specifically, how do commentary presentation systems elicit consumer affective states, which determine the evaluative judgment of the advertised product?

Answers to this question are timely and important to both practitioners and researchers. As marketers are increasingly incorporating social media as an integral part of their promotional mix, inquiries into the impacts of WOM on consumers' judgmental evaluation via social media become vital. Much attention in marketing and consumer research has been devoted to understanding the volume, valence (i.e., overall

sentiment, positive vs. negative), and vividness (vivid face-to-face vs. pallid printed WOM) of the WOM conveyed by social media (e.g., Herr et al. 1991).Very limited research has examined the rich textual content readily available in peer comments. Indeed, the impacts of WOM presentation and sentiment divergence of WOM on consumer judgment require much more research.

Furthermore, existing research on the design of social media platforms has emphasized the cognitive factors, which facilitate the communication and internalization of information conveyed via the social media. For example, prior research has studied how the provision of decision aids or recommendation systems could lower the cognitive load of the consumer judgments and thus ease the consumer evaluation tasks (e.g., Komiak and Benbasat 2006; Wang and Benbasat 2009). Yet, non-cognitive factors, such as affect, are frequently overlooked by the literature. Nevertheless, affect plays a crucial role in the context of online video sharing website, because consumers typically seek pleasure and enjoyment beyond just information gathering and evaluation. Essentially, when consumers feel positive (e.g., pleasant and exciting) towards the design features (e.g., commentary presentation), these positive affective feelings are often used as a basis for the product judgment. This knowledge is of great practical value for social media platform design, because consumers often exhibit greater commonality in affective reactions toward stimuli than in cognitive assessments (e.g., Pham et al. 2001; Schwarz and Clore 2007). Despite the prevalence of affect in social media context, research on affect-eliciting interface design features still lags. This research recognizes the value of affect-eliciting features for website design and attempts to address how to design a video sharing website to facilitate desirable affective states and evaluation in consumers.

Motivated by these research gaps, the proposed study focuses on the manner in which WOM information is presented (overlaid directly onto the videos in a *danmaku* system vs. in a separate space near a video advertisement). We hypothesize that *danmaku* (vs. separate) commentary presentation systems are able to elicit more pleasant and exciting advertisement watching experience, which in turn influence the evaluation of the advertised product. Furthermore, we expect that the influence of commentary presentation systems on consumer judgment is contingent on the sentiment divergence of comments, consumer involvement and consumers' metamotivational state.

Literature Review

Affect-Eliciting Design Features

Affect is an umbrella term that encompasses mood, emotions, and feelings (Bagozzi et al. 1999; Liljander and Mattsson 2002; Russell 2003). It is conceived as a fundamental aspect of human beings, influencing reflex, perception, cognition and behavior (Russell 2003). In addition, affect is often characterized within a two-dimensional structure of valence (pleasant-unpleasant) and arousal (sleepy-activated) (Russell 1980). Valence refers to the pleasantness or unpleasantness of the affect, while arousal represents the degree of activation associated with the affect. Prior research on marketing and consumer behavior has demonstrated that affect explains a significant amount of variance in consumers' behavior (Bagozzi et al. 1999; Kim et al. 2007). There is much empirical evidence that consumers perform product evaluations by monitoring their subjective affective responses to the target (e.g., Damasio 1994; Pham 1998; Schwarz and Clore 2007; Wyer Jr et al. 1999). Furthermore, recent advance in research on affect reveals that affect sometimes outperforms cognition in predicting judgment. As Pham et al. (2001) discuss, affect might provide judgmental responses that are potentially faster, more consistent across individuals, and thus more predictive than cognition. Similarly, Murry Jr et al. (1992) suggest that affective states directly influence consumers' attitudes toward advertisements and brands.

Much research in human-computer interaction and interface design has been devoted to understanding the impacts of design features on cognitive factors of human behavior (e.g., cognitive load), which transfer to users' attitudes toward the interface. For instance, prior research has studied the influence of decision aids and recommendation systems on cognitive load of consumer judgments, and subsequently, consumers' satisfaction of the interface (Komiak and Benbasat 2006; Wang and Benbasat 2009). However, researchers are increasingly examining affective factors in human-computer interaction (for reviews, see Sun and Zhang 2006; Zhang 2013). For instance, researchers have examined various affect-related concepts, such as affective user interface (Johnson and Wiles 2003), cognitive absorption (Agarwal and Karahanna 2000), computer playfulness (Webster and Martocchio 1992), emotions on information technology use (Beaudry and Pinsonneault 2010; Xu et al. 2012; Yin et al. 2014), flow

(Csikszentmihayli 2000; Finneran and Zhang 2003; Finneran and Zhang 2005; Ghani and Deshpande 1994), funology (Blythe et al. 2004), and perceived affective quality (Zhang and Li 2005). These studies have prompted researchers to shift from usability-centric design (e.g., Norman 1983; Norman 1988; Norman 1993) to affective design (e.g., Norman 2002; Norman 2004; Norman et al. 2003). Furthermore, Zhang (2013) proposes the affective response model (ARM) to conceptualize various affective concepts and their relationships. Particularly, ARM posits that the affective characteristics resides within a particular design feature would induce individuals' affective states during an interaction episode with the feature. The induced affective reactions, subsequently, will influence individuals' affective evaluations.

Prior literature on affect, particularly, the affective response model, has several implications for interface design of social media platforms. First, interface design features (e.g., commentary presentation systems) might contain affective information, and thus have the potential to elicit affective states. Second, consumers may appraise a design feature during an emotional episode where the affective characteristics of the design feature would induce consumers to react affectively in the form of induced states and affective evaluations. Yet, little is known about how affect could be elicited by interface design features.

Prior research on affect has identified two mechanisms by which affects are elicited. First, affect can be produced *integrally* by the target, via a percept of the target (e.g., looking at a product) or a mental presentation of the target (e.g., imaging using the product). Second, affect may be elicited *incidentally*, by a pre-existing or contextually-induced mood that colors the experience (Schwarz and Clore 1983). In this study, we conceptualize *commentary presentation style* (independent of the content of the comments) as an affect-eliciting design feature. Unlike many previous studies on affect-as-information, the present research focuses on affect that is elicited by a design feature of video sharing websites, specifically, the manner in which peer comments are displayed together with the content of the video advertisement (i.e., commentary presentation).

Two strands of literature seem particularly likely to explain how various commentary presentation systems might elicit affective states differ in valence and arousal. The first, i.e., social influence literature, focuses on valence of affective states induced during the internalization of peer opinions. The second theory is specific to commentary systems which create a sense of social presence, and thus elicit higher level of arousal.

Social Influence

The persuasion effects and social influence exerted by word-of-mouth (WOM) communications are well established both theoretically and empirically (e.g., Herr et al. 1991). WOM is the process of conveying information from person to person and plays a major role in customer purchase decisions (Richins and Root-Shaffer 1988). In commercial situations, WOM involves consumers sharing attitudes, opinions, or reactions about business, products or services with each other. The emergence of Internet-based media has facilitated the development of electronic WOM (eWOM), which is accessible to people via online channels (Hennig-Thurau et al. 2004). Prior studies have examined the effects of eWOM on consumer product sales (Chevalier and Mayzlin 2003), consumer decision making processes (De Bruyn and Lilien 2008), and attitude towards brands and websites (Lee et al. 2009). Social media, such as video sharing websites, represent an ideal tool for eWOM, as consumers are allowed to freely publish, consume and disseminate product-related information in the form of comments (Vollmer and Precourt 2008). In online video advertising context, WOM serves as a source of informational social influence, i.e., the "influence to accept information obtained from another as evidence about reality" (Deutsch and Gerard 1955). The informational social influence can be accomplished through the process of internalization which occurs when consumers accept influence because it is perceived as being instrumental to their judgmental evaluation and enhancing their knowledge or ability to cope with the consumer decision making tasks (e.g., purchasing a product) (Kelman 1961).

Past research has devoted much attention to the impacts of the volume (e.g., Duan et al. 2008; Liu 2006), valence (e.g., Chevalier and Mayzlin 2006) and vividness (e.g., Herr et al. 1991) of WOM on consumer judgment. However, researchers have only recently started examining the rich contextual content of WOM in detail. For instance, Zhang et al. (2012) proposed a set of content-based measures which captures the sentiment divergence of WOM, and demonstrated significant effects of the proposed sentiment divergence measures on product sales. In particular, Zhang et al. (2012) posit that the informativeness of WOM might be largely reflected by the degree of opinion divergence in the comments,

because a divergent set of opinions posted by different consumers presents a larger amount of product-matching information. Consequently, this divergent set of product-related comments would enhance consumers' knowledge about the product and their ability to identify matching products with their usage conditions and preferences. Therefore, sentiment divergence might facilitate the internalization of WOM.

This study emphasizes video sharing websites (e.g., niconico.jp and Youtube.com) as an emerging venue for consumer-to-consumer WOM communication and an important conduit for social influence. In particular, it extends the previous literature on WOM by investigating the effects of sentiment divergence of WOM, and the presentation style of WOM (i.e., *danmaku* vs. separate comments), and their interaction effects on judgmental evaluation via affect.

Social Presence

Human-computer interaction research has identified social presence as a key factor in website design to overcome the lack of warmth, social cues, and face-to-face interaction (e.g., Gefen and Straub 2004; Hassanein and Head 2006; Hess et al. 2009). Social presence refers to being together with others or the degree to which a medium facilitates the establishment of interpersonal connection between peer users (Short et al. 1976). It represents the capabilities of a media, such as a video sharing website, to allow users to experience their peers as being psychologically present (Fulk et al. 1987). Social presence theory suggests that media differ in media richness would vary in the amount of social presence they afford (Short et al. 1976). It assumes that face-to-face is of high social presence because it conveys not only verbal information, but also rich non-verbal social cues, such as facial expression, tone, and gestures, which are sometimes critical to revealing a communication stance. In contrast, computer-mediated communication, such as email, is typically associated with low level of social presence due to its decreased capability to convey those social cues (Rice 1993; Sia et al. 2002; Straub and Karahanna 1998).

Past research has shown that website design features can manifest social presence, for example, through imaginary interactions generated automatically by the website (Hassanein and Head 2006). This implies that although video sharing websites generally do not facilitate direct interpersonal interaction among users, the feelings of social presence might be conveyed by the website by stimulating a sense of interacting with others. Furthermore, researchers have unraveled that the perception of social presence serves a mediating role in influencing other attitudinal antecedents, such as perceived usefulness (Karahanna and Straub 1999), enjoyment (Hassanein and Head 2006), trust (Gefen and Straub 2004) and arousal (Fortin and Dholakia 2005). In particular, arousal can be elicited by design features (e.g., commentary presentation) of high social presence through an increase in motor activities of muscular responses required by attending to the rich social cues conveyed by the website (Wells and Petty 1980; Zajonc and Markus 1982).

Research Model and Hypotheses

The present study investigates the research question in the domain of online video advertising context. We examine two types of video sharing websites with different commentary presentation systems, namely *danmaku* video sharing websites pioneered by niconico.jp, and video sharing websites with separate commentary presentation systems, such as Youtube.com. The research model is depicted in Figure 1.

Affect and Consumer Judgment

Affect is increasingly recognized as central to consumer judgment (e.g., Pham et al. 2001). The affective response model suggests that affective states induced by design features would influence consumers' affective evaluations, during consumers' interactions with the social media platform (Zhang 2013). Furthermore, researchers have investigated the role of each dimension of affective states in determining consumer judgment. For example, studies on affect-as-information (Schwarz 1990; Schwarz and Clore 2007) unravel that individuals sometimes infer the direction of judgmental evaluation (e.g., liking vs. disliking) from the valence of their affect toward the target (e.g., Gorn et al. 1993; Levine et al. 1994; Pham 1998). Consequently, consumers might interpret positively valenced affect as a presence of desirable outcomes (e.g., favorable products) or a lack of threats to current goals (e.g., goals of product evaluation). In contrast, negatively valenced affect might inform consumers a lack of positive outcomes or a threat of negative outcomes (Schwarz 1990). Thus, we hypothesize that:

H1: Valence (pleasure) will positively influence the evaluation of the advertised product.

In addition, individuals might infer the strength of their judgmental evaluation by monitoring the intensity of these feelings, that is, the level of arousal elicited by the target (Gorn et al. 2001). According to the reversal theory (Apter 1982; Apter 1991), arousal might be interpreted differently in two different metamotivational states, namely telic (goal-oriented and anxiety-avoiding) versus paratelic (activity-oriented and excitement-seeking) states. Consistent with the notion of reversal theory, we draw on the distinction between telic and paratelic metamotivational states to characterize two types of video browsing activities: goal-oriented browsing (i.e., users are more interest in understanding the content of the video to achieve a certain goal) versus non-directed explorative browsing (i.e., users view the video without a definite goal in mind). When consumers are in the telic state, their ultimate goal of product evaluation is perceived as more critical than the video watching activity. Thus, a high level of arousal might be interpreted as a source of interference from achieving the goal, and thus experienced as anxious by telic consumers. A low level of arousal, however, might be associated with relaxation. In contrast, when consumers are in the paratelic state, consumers engage in the video watching activities for the immediate fun and enjoyment. Consequently, paratelic consumers are likely to experience high level of arousal as exciting whereas low level of arousal as boring. Prior research has shown that arousal will encourage approach behavior (e.g., giving more favorable evaluations to the product) when it is experienced as exciting, but stimulate avoidance behaviors (e.g., leaving the video page and moving on to other product alternatives, and giving less favorable evaluations to the product) when it is interpreted as anxiety (Mehrabian and Russell 1974). Therefore, we expect that:

H2a: When a consumer is in a paratelic state, arousal (activation) will positively influence the evaluation of the advertised product.

H2b: When a consumer is in a telic state, arousal (activation) will negatively influence the evaluation of the advertised product.

The Effects of Commentary Presentation on Valence

One key difference between *danmaku* and separate commentary presentation systems is the locations where comments are displayed. Such spatial difference in comments displayed implies that *danmaku* and separate commentary presentation also differ in when users could view and comprehend the comments on the video advertisement. When the flying commentary subtitles are enabled, consumers will view video content and the comments at the same time. Consequently, it is difficult for consumers to deliberate on each piece of comments moving rapidly from right to left on the screen and comprehend the content of the video advertisement at the same time. In contrast, in traditional video sharing site with separate commentary display section, consumers will typically read the comments before or after watching the video content. Thus, they could have enough time to pay more attention to the details of the comments before or after concentrating on the content of the video advertisement.

Following cognitive appraisal theories of affect, the impact of the affect-eliciting feature on affective valence would be determined by the cognitive appraisal during an interaction episode with the feature (Lazarus 1982). We argue that the sentiment divergence of WOM information may provide a basis for the cognitive appraisal because it implicates the interpretation and explanation of the induced affective states (Frijda 1986; Lazarus 1982; Ortony 1988). In particular, when peer opinions are divergent, *danmaku* is more likely to be interpreted as informative and instrumental by consumers. This is because the primary role of WOM is to provide additional information for consumers to identify products which meet their needs and preferences (Chen and Xie 2008). Hence, consumers might find it valuable to incorporate the divergent set of product-matching information to form a coherent representation of the product in memory. This enhances consumers' knowledge about the advertised product and thus facilitates the internalization of the WOM, leading to a more pleasant information processing experience. Thus, *danmaku* presenting divergent comments will be interpreted as informative and desirable, and be relied on as heuristics, especially when consumers do not have sufficient time to deliberate on the details of information carefully. In contrast, a separate commentary presentation enables consumers to slowly integrate each piece of peer opinions, either positive or negative. It is possible that consumers might be biased by the presence of negative WOM (Baumeister et al. 2001). It is plausible that the negative feelings associated with the negative comments might color the experience of internalizing WOM before and/or

after watching the content of the video, thus eliciting less pleasant affective states. Thus, we hypothesize that:

H3a*: When comments are more divergent, the danmaku presentation (vs. separate commentary presentation) is more likely to elicit more positive valence (more pleasant affective states).*

When consumer comments are less divergent and perceived to be repetitive, *danmaku* is more likely to be interpreted as a source of distraction and annoyance, because it directs consumers' attention away from the more informative video content. The feelings of annoyance is likely to determine the cognitive appraisal of *danmaku* commentary presentation and thus induce less pleasant affective states, compared with information processing with separate commentary presentation which is free of distractions. Therefore, it is hypothesized that:

H3b*: When comments are less divergent, the danmaku presentation (vs. separate commentary presentation) is more likely to elicit more negative valence (less pleasant affective states).*

The Effects of Commentary Presentation on Arousal

The second major difference between *danmaku* and separate commentary presentation systems concerns the timeline of comments displayed. The *danmaku* system allows consumers to view comments about a specific feature of the product, automatically synchronized to a specific playback time demonstrating such feature. Although separate commentary systems may also engage audience with timeline commenting and tagging, consumers may need to respond indirectly to the comments by manually clicking the time tagged in a piece of comment, and the click will then bring the consumers to the tagged playback time. Therefore, comments are less synchronized with the content of the advertisement in separate commentary systems, compared with the comments displayed by *danmaku* systems. In addition, the *danmaku* system enables consumers to write their comments on specific features of the advertised product as well as their overall opinion about the advertisement, and the comments would be broadcasted to all viewers in real (video) time. This allows their own opinions being heard by their peers, and thus increases the interactivity of the video watching experience. The synchronous and interactive video watching experience enabled by *danmaku* commentary presentation facilitates video-time based interactions among consumers, and therefore leads to higher degree of social presence (Hassanein and Head 2006).

Prior studies on arousal suggest that arousal can be generated by increased motor activities and/or muscular responses (Wells and Petty 1980; Zajonc and Markus 1982). Compared with separate commentary presentation, *danmaku* provides richer and more interactive social cues and thus requires considerably more attention to view and comprehend such cues. *Danmaku* thus serves as a source of stimulation, which may provoke more energy mobilization and a higher level of arousal in users (Deng and Poole 2010). Hence, we expect that:

H4a*: The danmaku presentation (vs. separate commentary presentation) is more likely to elicit higher arousal (higher activated affective states).*

Furthermore, the extent to which the media (*danmaku* vs. separate commentary) enable the perception of social presence is affected not only by the capabilities of the medium (e.g., the provision of social cues), but also by the nature of the consumers using it (Yoo and Alavi 2001). When consumers are highly involved in the video advertisement (which are highly attractive or of greater relevance to them), they are more likely to exert energy carefully watching both the content of the video and the comments overlaid onto the video, and thus generating higher level of arousal (Wells and Petty 1980; Zajonc and Markus 1982). Less involved consumers, however, might be less willing to exert the energy required by the *danmaku* system. Hence, consumer involvement might enhance the positive association between WOM presented in the form of *danmaku* and the arousal dimension of consumer affect. Therefore, we propose that:

H4b*: When consumers are more involved (vs. less involved), the danmaku presentation is more likely to elicit higher arousal (higher activated affective states).*

Figure 1. Research Model
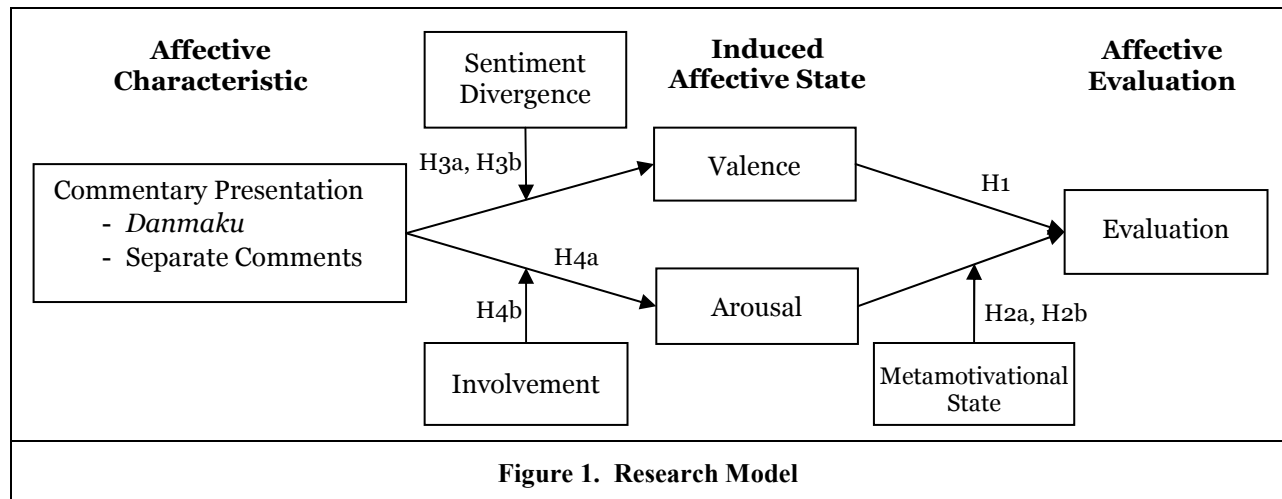
Research Methodology

We will test the research model and hypotheses in an experiment. Undergraduate students will be invited to participate in the study. Participants will be given monetary rewards or course credits for participation. Participants will be randomly assigned to one of eight conditions of a 2 (commentary presentation: *danmaku* vs. separate commentary) × 2 (metamotivational state: telic vs. paratelic) × 2 (sentiment divergence: low vs. high) between-subjects experiment design.

An actual video advertisement introducing a smart ring is modified for use in constructing stimulus materials. This innovative product is chosen because it might be unfamiliar to the average participants. Consequently, participants are less likely to have pre-existing attitude or feelings toward the product. A pretest will be conducted to assess the affective tone of the video advertisement. Prior research reveals that the coloring effect of incidentally induced affect is more likely to be manifested when the advertisement is ambiguous in its affective tone than when the advertisement itself has a clearly positive or negative affective tone (Gorn et al. 2001). In the pretest, participants are also required to write their comments about a specific feature or the overall impression of the advertised product. Two video sharing websites will be developed: one implements the *danmaku* commentary presentation, and the other resembles a video sharing website with separate commentary presentation. For consistent manipulation in the experiment, the option to turn off the *danmaku* subtitle and the subtitle editing tools for *danmaku* condition are disabled in the experiment, controlling for affects elicited by the special subtitle display effects enabled by such tools.

We will create two hypothetical video browsing scenarios to evoke telic and paratelic metamotivational states respectively. In the telic condition, participants would be provided with a fictional situation where they are going to watch a video on a smart ring which is on their best friend's wish list and they are considering the smart ring as a potential birthday gift for the friend. In the paratelic condition, participants would be required to imagine that they are browsing the Internet looking for fun and enjoyment and that a video advertisement recommended by their friend attracts their attention.

In addition, sentiment divergence of the comments displayed together with the content of the advertisement is manipulated by selecting either a convergent (mostly positive) or a divergent set of viewers' comments generated in the pretest. Zhang et al. (2012)'s sentiment divergence measures are computed for each set of comments selected to ensure that the comments displayed in the high-divergence condition are significantly more divergent than those displayed in the low-divergence condition.

Around 30 participants will be exposed to each of the eight conditions just described. They will be introduced to the study with the instructions that (a) the purpose of this study is to investigate individuals' reactions to the information they encountered in a typical video sharing website, (b) we are particularly interested in their reactions to advertisements of the sort that often appear in video sharing websites, such as Youtube.com, and (c) they should view an advertisement and post their comments on

the advertisement in much the same way they would if they encountered the same video advertisement at their favorable video sharing website. With this preamble, participants will start viewing the video advertisement at their own pace. They may also add comments on the advertised product if they wish to do so. After viewing the video advertisement, participants will be required to evaluate the advertised product (i.e., a smart ring) by estimating both their liking for the product and its desirability along 7-point scales anchored from 1 (very undesirable) to 7 (very desirable). Finally, participants will complete a survey questionnaire with items measuring valence, arousal, the level of involvement and social presence experienced. We will check the manipulation of metamotivational state by adapting O'Connell and Calhoun's (2001) Telic/Paratelic State Instrument. Measurement items for affective valence and arousal are adapted from Mano (1991) and Mehrabian and Russell (1974). The five-item scale developed by Short et al. (1976) will be used to measure social presence. In addition, the revised personal involvement inventory measuring consumers' involvement with the advertisement is adapted from Zaichkowsky (1994).

Conclusion

The present study will extend the prior literature in several noteworthy ways. First, it will complement the conventional cognition-driven approach in studying website design features by highlighting the impact of affect-eliciting features (i.e., commentary presentation systems). The present study intends to advance the literature in human-computer interaction by investigating how a real-time commentary subtitle system, i.e., *danmaku*, would be able to elicit positive and activated affective states (i.e., feeling pleasant and excited about watching video advertisement), which in turn predict consumers' judgmental evaluation. By conceptualizing commentary presentation as an affect-eliciting design feature, the present study will help to establish the connection between affect experienced by consumers and the possible affect-eliciting quality of interface design features. Second, this research will expand the literature on word-of-mouth and social influence. The present work is one of the first to conceptualize and, potentially, empirically demonstrate the persuasion effect of the interaction between WOM presentation (*danmaku* vs. separate commentary presentation) and sentiment divergence of WOM, mediated by the valence of affect induced. Third, while prior research on social presence focuses mainly on the different feelings of social presence instilled by media of different richness, the present research will contribute to our understanding of social presence by examining two types of commentary presentation of equal media richness but which have the potential to induce different levels of social presence and thus different levels of arousal.

This study has the potential to provide important implications for the use of affect-related capabilities of social media. This research calls for practitioners' attention to design features with possible affect-eliciting quality. Specifically, our research might indicate that to leverage the persuasive power of online commentary systems, affective design features should be strategically employed to elicit pleasant and exciting feelings, which might color the product evaluation process. Further, if the hypotheses are supported, the study may show that *danmaku* commentary subtitle system would be appropriate for video advertisement when the sentiment of the comments displayed onto the video are divergent, when consumers are highly involved in the content of the video and when they are watching the video for fun and enjoyment. Upon completion, this research may help practitioners to identify and implement effective affect-eliciting design features that can induce desired affective responses. It may also provide guidelines for video sharing websites to personalize commentary presentation for different groups of customers, that is, customers who arrive at the video through keyword search and are likely to have ultimate goal of product evaluation versus those who explore the video for hedonic browsing.

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