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COMPUTER-MEDIATED PERSUASION IN ONLINE REVIEWS: STATISTICAL VERSUS NARRATIVE EVIDENCE

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COMPUTER-MEDIATED PERSUASION IN ONLINE REVIEWS: STATISTICAL VERSUS NARRATIVE EVIDENCE

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ABSTRACT

COMPUTER-MEDIATED PERSUASION IN ONLINE REVIEWS:
STATISTICAL VERSUS NARRATIVE EVIDENCE

By:

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The current study examined persuasive effects of online reviews about a product considering summary of statistical ratings as a type of statistical evidence and consumer comments as a type of narrative evidence. Study 1 used a (statistical and narrative review) × 2 (negative and positive review) between subject design. Study 2 used a 2 (statistical review valence: positive and negative) × 2 (narrative review valence: positive and negative) between subject design. In both studies, the effects of online reviews were examined on the credibility perception of the reviews, attitudes about a product, and intention to purchase the product. Findings indicated that statistical negative reviews were perceived to be the most credible. On the other hand, statistical reviews and narrative reviews did not differ in affecting attitudes about the product and intention to purchase the product. Additionally, the current study found that the vividness of individuals' perceptions of each review type and valence had varying effects on review credibility, attitudes about the product, and intention to purchase the product.

This thesis is dedicated to my families: mother, Soonsup Lee, my father, Sanggi Hong, my aunts, Hiosup Lee and Yangsup Lee, and my grandmother, Youngsoon Kim who have given endless love, support, and encouragement to me

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

Word of mouth (WOM), as a type of interpersonal communication, is defined as all forms of information exchanged among people regarding products, or services (Bass, 2004; Biyalogorsky, Gersyner, & Libai, 2001). It can be simply described as buyers saying to each other "if you buy, I will buy" (Arndt, 1967a, p.295). People often follow their peer group's opinions because they are concerned about what others may think of them, how others react to their behavior, and how credible the information they obtain from others is (Arndt, 1967b).

WOM is a persuasive and distinctive marketing tactic because of its informal and non-commercial characteristics. Brooks (1957) claimed that WOM is a key factor in interpersonal and social influence networks and is powerful and relevant to the diffusion of information. Consumers often have difficulty in evaluating products because of their limited sphere of experience, and they perceive a high risk in purchasing (Heywood, 1989). Therefore, they rely on the information from previous users of the product to mitigate the risk. Walker (1995) demonstrated that more than 40% of Americans seek others' opinions when they need shopping advice.

WOM recommendations are perceived to be more credible (Dellarocas, 2003) and receive more attention than other types of recommendation (Arndt, 1967; Ditcher, 1966; Silverman, 1997). Because WOM messages originate from "people like me" who have no personal interest in recommending a particular brand or a product, WOM is perceived to be unprejudiced (Allsop, Bassett, & Hoskins, 2007). As a result, people tend to rely heavily on WOM when they make purchasing decisions (Davis, Guiltman, & Jones, 1979; Richins & Root-Shaffer, 1988).

After the earliest research of Katz and Lazarfeld (1955) that claimed a significant role for WOM as a personal influence, the importance of WOM has been examined with various products or services such as searching for a physician (Coleman, Katz, & Menzel 1957; Feldman & Spencer, 1965), new fabric (Beal & Rogers, 1957), information about farming practice (Katz, 1961), razor blades (Sheth, 1971), air conditioners (Whyte, 1954), and automobiles (Newman & Staelin, 1972). In particular, WOM is considered a major drive in the diffusion of information (Brown & Reingen, 1987) due to its influence on a person's decision to adopt an innovation (Rogers, 1995; Williams, Strover, & Grant 1994). Considering the significant influence of WOM on purchasing, WOM is "the most powerful force in the marketplace" (Silverman, 2001, p. 47).

LITERATURE REVIEW

Traditional WOM versus Electronic WOM

Since the appearance of the Internet, a number of scholars have underlined the role of WOM in the online sphere (e.g., Goldenberg, Libai & Muller, 2001; Hennig-Thurau et al., 2004; C. Park & Lee, 2009; D.-H. Park & Lee, 2008). Electronic WOM (eWOM) refers to "any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet" (Hennig-Thurau et al., 2004, p.39). Although Hennig-Thurau et al. (2004) claimed that the concepts of eWOM and traditional WOM are similar, when it comes to speed, convenience, one-to-many reach and the lack of pressure in face-to-face communication, electronic WOM is more influential than traditional WOM (Chatterjee, 2001; C. Park & Lee, 2009; Phelps et al., 2004). Dellarocas (2002) also claimed that eWOM is different from traditional WOM in its bi-communicational possibilities, low cost when conducted via the Internet, the company's ability to control and monitor the operation, and new potential in the online situations. Knowing the importance of eWOM, companies are currently putting forth enormous efforts to initiate WOM online (Schwartz, 1998).

Researchers have identified five different characteristics useful in distinguishing eWOM from traditional WOM (Chatterjee, 2001; Chen & Xie, 2008; Hennig-Thurau et al., 2004; Sun, Youn, Wu, & Kuntaraporn, 2006). The first characteristic is the *endless boundary*: eWOM communicators can reach far beyond geographical limitations, because consumers all over the world are accessible via the Internet. The second is the *written sphere*: unlike traditional WOM which consists of spoken word exchanges, electronic

WOM takes place with written words. This makes eWOM more prevalent than traditional WOM, because the written word is more logical than the spoken. The third characteristic emphasizes the *communication with anonymous people*: consumers share their opinions with other anonymous consumers on the Internet, while traditional WOM occurs between friends or relatives. The fourth is *directness*: eWOM allows a seller to effectively and directly initiate and broadcast consumer reviews with the help of advancement in technologies. The last characteristic is *volume*: information available online is much more voluminous in quantity compared to that of traditional WOM.

On-Line Consumer Review as a Tool of eWOM

With the growth of online commerce, seeking online opinions of other consumers is increasingly becoming a part of purchasing behavior (Pitta & Fowler, 2005). Technological developments in web sites provide unprecedented opportunities for customers to express their opinions about companies, products, and services in the form of online reviews (Evans, Wedande, Ralston, & Van't Hul, 2001). Online consumer reviews have been treated as special type of WOM in many studies (e.g., Chatterjee, 2001; Chen & Xie, 2008; Godes & Mayzlin, 2004; Hu, Liu, & Zhang, 2008; D.-H. Park & Lee, 2008). Chen and Xie (2008) discussed the implications of online customer reviews for marketing strategies and recommended that the sellers need to develop unique response system in online reviews. The study of D.H. Park and Lee (2008) reported that the number of reviews affects the perceived review informativeness and popularity of the product. Online customer reviews significantly impact both companies and customers. For example, online reviews for movies significantly affect the revenue of the weekly box office (Liu, 2006). Out of consumers who visit online malls, 50%

consider reviews an important factor in their decision (Piller, 1999). Chevalier and Mayzlin (2006) found that online book reviews are integral sources in book sales. Knowing the significant impact of customer reviews, companies such as eBay.com and Amazon.com take action to increase the benefits of using online reviews (Melink & Alm, 2002). Online reviews can provide indirect experience before consumers make a purchase decision (Park, Lee, & Han, 2007) and work as free 'sales assistance' to the e-consumers utilizing them as a new part of marketing communications (Chen & Xie, 2008; Wernerfelt, 1994). Online consumers utilize online reviews in order to learn about products and reduce the uncertainty risks and transaction cost (Hu, Liu, & Zhang, 2008; D.-H. Park & Lee, 2008).

Consumers frequently use online review that consumer- generated information is more credible than seller-created information (Wilson & Sherrell, 1993). Also, consumer-generated information is more interesting to the online consumer compared to marketer-generated information (Bickart & Schindler, 2001). People consider consumer reviews created by users to be for the benefit of other users, so their information will contain more possible usages (Chen & Xie, 2008). Additionally, online reviews enable buyers to overcome the limitations of an online store; it is impossible to see, touch and smell the product (Chatterjee, 2001; Chen & Xie, 2008; Park, Lee, & Han, 2007). In other words, online review meets consumers' need as they are looking for recommendations about purchasing a product. Therefore, the online review as a form of eWOM communication has become a crucial source for both consumers and marketers.

The feedback system that eBay employs is an excellent example of online consumer review (Chevalier & Mayzlin, 2006). The feedback system allows consumers

to acquire verifiable information about sellers who may be unknown in cyberspace. Sellers can build their reputation by increasing the number of transactions they make on eBay (Resnick & Zeckhauser, 2002). A number of studies have examined the efficiency of the eBay feedback system. For example, Resnick, Zeckhauser, Swason, and Lockwood (2006) showed that users have stronger willingness to purchase the product from a seller with a high reputation rather than a seller with a newly created account. Additionally, positive feedback increased the price of products (Dewan & Hsu, 2004; Kalyanam & McIntyre, 2001; Mcdonald & Slawson Jr., 2002; Melink & Alm, 2002) while negative feedback decreased the price (Kalyanam & McIntyre, 2001; Melink & Alm, 2002) and probability of sale (Melink & Alm, 2002).

Computer-Mediated Persuasion

O'Keefe (2004) pointed out that despite today's widespread use of computers, few studies investigated the aspects of "computer mediated persuasion." Moreover, researchers have emphasized the necessity of considering the influence of computer mediated persuasion on the use and effectiveness of evidence (Reynolds & Reynolds, 2002; Seiter & Seiter, 2005). Therefore, the current research aims to fill the gap between persuasion research in offline and online environments and improve understanding of the persuasion effects of online evidence. Drawing from the literature on WOM and persuasion, this study seeks to build a connection between them in the context of online reviews. The present study compares the two types of online reviews: narrative and statistical evidence.

Online reviews can be classified into two types of feedback. One is a statistical feedback (*e.g., 999 customers out of 1000 satisfied with the product*) and another is a

narrative feedback (e.g., *I strongly recommend this camera. When I went to Sea World at night, it was easy to take a picture in the darkness with its amazing flash function*). The feedback system in eBay provides both types of feedback on the same web page. Inconsistencies between the statistical and the narrative feedback can occur. Even when the statistical feedback is very positive, the narrative feedback can be negative for the same product. Then, one may ask which kind of feedback is more likely to influence online consumers' attitudes about a product.

THEORETICAL BACKGROUND

Persuasion and Evidence

McCroskey (1969) defined evidence as "factual statements originating from a source other than the speaker, objects not created by the speaker, and opinions of persons other than the speaker that are offered in support of the speaker's claims" (p. 170). Evidence includes relevant facts, opinions, and information that support the persuader's assertion (O'Keefe, 2002). In general, evidence is employed to increase the persuasiveness of the message and provide argumentative support for the message. Evidence consists of the facts and opinions creating a logical basis for the argument (Abernathy, 1964; Cohen & Nagel, 1962). Past research has shown that use of evidence is more persuasive when message recipients have personal involvement in an issue (Cacioppo, Petty, Kao, & Rodriguez, 1986; Petty & Cacioppo, 1984; Petty, Cacioppo, & Goldman, 1981; Reynolds & Reynolds, 2002; Seiter & Seiter, 2005).

Statistical versus Narrative Evidence

The current paper examines two types of evidence: statistical and narrative evidence. Statistical evidence is one type of factual information (Baesler & Burgoon, 1994; Reinard, 1988), includes "quantified descriptions of events, persons, places, or other phenomena" (Church & Wulbanks, 1986, p. 108), and is characterized as proof in the form of summary information across a number of cases (Allen & Preiss, 1997). Dickson (1982) considered "a rate, frequency, proportion, percentage, probability, average, median, or other statistical parameter" as statistical information (p. 399). Persuasiveness of statistical evidence can depend on the number of observations, because

a larger number of cases can indicate stronger objectivity. Moreover, statistical evidence has a direct impact on judgments and an indirect impact on attitudes (Boster et al, 2000).

Narrative evidence is a message that presents information in a personal format as opposed to a statistical format (Arneson & Query, 2001; Ellinson & Buzzanell, 1999; Vanderford, Smith, & Harris, 1992). Narrative evidence is defined as the "use of case stories or examples to indicate that the conclusion offered by the communicator is true" (Allen & Preiss, 1997). Narrative evidence includes testimonial assertions which Reinard (1988) referred to as judgments and opinions from others, and also includes what O'Keefe (2002) refers to as description and information in detail about an instance or an event. Generally, it focuses on elaborating the example of an event and providing appealing detail, characters, and some plot (Greene & Brinn, 2003).

A number of studies have been conducted to examine the effects of evidence. Particularly, the comparison between narrative and statistical evidence has received attention from researchers. Previous studies stated that narrative evidence is more persuasive (Kazoleas, 1993; Kahneman & Trversky, 1973; Nisbett & Ross, 1980; Nisbett & Borgida, 1975; Taylor & Tompson, 1982). On the other hand, Reinard (1988) showed that both statistical and narrative evidence are equally persuasive and memorable. Also, other studies reported that both statistical and narrative evidence produce persuasive effects equally and reported no difference between the two types (Iyengar & Kinder, 1987; Nadler, 1983; Reyna, Woodruff, & Brainerd, 1987). Therefore, as O'Keefe (2002) pointed out, it is unclear why and how one type of evidence is more effective than the other.

Putting aside the debates, a number of studies have continually emphasized the superior effect of statistical evidence. A meta-analysis by Allen and Preiss (1997) showed statistical evidence to be slightly more effective. Correspondingly, statistical messages are found to be more effective for health information than narrative information but both statistical and narrative messages are better than none at all (Greene & Brinn, 2003). Kopfman, Smith, Yun, and Hodges (1998) noted that messages containing statistical evidence produced greater cognitive reactions while narrative evidence produced greater affective reactions. Moreover, Baesler and Burgoon (1994) found that both forms of evidence were initially persuasive when compared to no evidence at all; however; statistical evidence was more persuasive in the long term. Baesler and Burgoon (1994) pointed out the fact that only a few studies on statistical versus narrative evidence used representative forms of narrative evidence, and they criticized the absence of studies addressing vividness.

Vividness is "information that's emotionally interesting, concrete and imagery provoking, proximate in a sensory, temporal, or spatial way" (Nisbett &Ross, 1980, p. 45). Narrative evidence is easier to imagine than statistical evidence because narrative evidence has vividness as a factor that bolsters the effect of persuasion. On the other hand, statistical evidence, considered to be more abstract than narrative, fails to facilitate involvement, increase interest, or engage attention. Baesler and Burgoon (1994) controlled vividness when comparing the two types of evidence and found that with vividness, statistical evidence was generally more persuasive and produced immediate, moderate term (48 hours) and long term (one week) persuasive effects. Considering the potential role of vividness as a confounding factor, it seems important to consider and

control the effect of vividness in order to conduct a fair comparison of statistical and narrative evidence. It is expected that statistical evidence is more compelling when vividness is controlled.

Persuasive Effects

In the current study, persuasive effects of online reviews will be assessed in three ways: credibility of reviews as evidence, attitudes about a product, and intention to purchase a product. Evidence can affect perceived credibility which will eventually increase persuasive effects (Reinard, 1988). Perceived credibility refers to "the judgments made by a perceiver (e.g., a message recipient) concerning the believability of a communicator" (O'keefe, 2002, p. 181). Although credibility often pertains to an information source or sender, online reviews as a form of eWOM are provided by anonymous and numerous people, rather than a particular one person. Thus, credibility can be also relevant for online reviews. For example, Flanagin and Metzger (2000) examined credibility of Internet information. When individuals see online reviews of a product, the extent to which they trust the reviews may vary. Online reviews can be persuasive in terms of their effects on individuals' evaluations of the product and intentions to purchase the product to which online reviews pertain. Attitudes about a product and purchasing intention have been a popular outcome of interests in previous studies examining the influence of WOM (e.g., Bansal & Voyer, 2000; C. Park & Lee, 2009; Sen & Lerman, 2007; Wangenheim & Bayon, 2004; Ying & Chung, 2006). It is expected that different types of evidence can be perceived more or less trustworthy and believable, and can result in varying levels of attitudes and purchasing intentions.

Hypothesis 1-a: Individuals will perceive online statistical reviews as more credible than online narrative reviews when vividness is controlled.

Hypothesis 1-b: Individuals will indicate more positive attitudes about a product after seeing online statistical reviews than online narrative reviews when vividness is controlled.

Hypothesis 1-c: Individuals will indicate stronger intention to purchase a product after seeing online statistical reviews than online narrative reviews when vividness is controlled.

Given that evidence means facts or opinions presented as proof for an assertion (Reynolds & Reynolds, 2002), evidence can also vary as negative or positive for a product at issue. Both positive and negative information can influence the attitude change, but the impact of negative messages on consumers is considerably more significant (Laczniak, DeCarlo, & Ramaswami, 2001). Satisfied consumers rarely mention their experience, but dissatisfied customers tell everyone (Holmes & Lett 1977; Swan & Oliver 1989). Additionally, research on WOM shows that negative WOM has larger impacts on purchasing decisions and on consumer behavior than positive WOM (Herr, Kardes, & Kim, 1991).

The valence of evidence (i.e., negative and positive evidence) can be differentially persuasive when individuals consider purchasing or not purchasing a product. Of the past studies of evidence, most studies used negative messages to show the effectiveness of the evidence regardless of the comparison results. Only a small number of studies used positive messages (e.g., Hamill, Wilson, & Nisbett, 1980; Hoeken, 2001; Kahneman, & Tversky, 1973 ; Koballa, 1986). For example, the past studies comparing statistical and

narrative evidence used negative evidence or messages about topics such as crime rates (Caroll, 1977), car accidents and safety belts (Kazoleas, 1993), electronic accidents (Wells & Harvey, 1977), car accidents and organ donation (Kopfman et al., 1998), pollution (Nadler, 1982), failed refrigerators (Dickson, 1982), divorce and juvenile delinquency (Baesler & Burgoon, 1994), alcohol education messages (Slater & Rouner, 1996), and skin cancer (Greene & Brinn, 2003). Of the studies using negative evidence, seven studies concluded that statistical evidence has greater persuasive effects. Thus, it is possible that the difference between statistical and narrative evidence can be greater when the evidence is negative toward a product than when it is positive. Thus, the following hypothesis is advanced:

Hypothesis 2: The difference between statistical online review and narrative online review containing negative information will be larger than the difference between statistical and narrative online review containing positive information.

Overview of Study 1 and Study 2

Two studies were conducted to examine the persuasive effects of review type and review valence. Study 2 replicated study 1 with only one difference. Study 1 used a 2 (review type: statistical and narrative review) × 2 (review valence: negative and positive review) between subject design. Study 2 used a 2 (statistical review valence: positive and negative) × 2 (narrative review valence: positive and negative) between subject design. For example, participants in one of four experimental conditions of study 1 read positive statistical review, whereas participants in one of four experimental conditions read statistical positive review as well as narrative positive review. After reading reviews

about a product (a digital camera), participants in both studies indicated their credibility perception of reviews, attitudes about the product, and intention to purchase the product.

Study 1

Study 1 Method

Participants

One hundred eighty one students (68.51% women, age $M = 22.35$, $SD = 3.09$) enrolled at Michigan State University participated in the study in exchange of course credit. Of the participants, 70.4% were Caucasian, 8.3% were Asian or Asian American, 3.7% were African American, 2.8% were Pacific islander, 0.9% were Hispanic, and 13.9% were other (i.e., unclassifiable, mixed, etc.). Tables 1 and 2 provide more detailed information about the demographic characteristics and online shopping tendencies of participants.

Design and Procedure

This study used a 2 (review type: statistical and narrative review) × 2 (review valence: negative and positive review) between subject design. The experimental materials included information about a product (a digital camera) and were designed following typical online review formats commonly found on eBay.com, for example. Statistical review included the number of ratings (e.g., positive review = 900 positive ratings out of 1000; negative review = 900 negative ratings out of 1000). For narrative review, examples of positive review included "Amazing quality" and "I will recommend this to everyone." Examples of negative review included "Disappointing quality" and "I won't recommend this to anyone." See appendix II for the experimental materials. This study also included a control condition that provided only the product information and no online reviews. In the control condition, participants answered questions only about their

attitudes towards the product and intention to purchase the product, not about review credibility and vividness. See appendix III for all the measurement items.

Manipulation Check

Review valence. For positive and negative reviews, 10 items ($\alpha = 0.99$) assessed the valence of reviews on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Example items included, "overall reviews are positive" and "almost all of reviews are recommending this product."

A 2 (review type: statistical and narrative review) × 2 (review valence: negative and positive review) between-subject ANOVA was conducted on valence. Review type did not have a significant main effect, $F(1, 141) = 0.40$, $p = .53$, $\eta^2 = .00$. Narrative review ($M = 3.92$, $SD = 2.29$) did not differ from statistical review ($M = 3.85$, $SD = 2.04$). Review valence had a significant main effect, $F(1, 141) = 923.15$, $p < .001$, $\eta^2 = .87$. Positive review ($M = 5.81$, $SD = 0.81$) was perceived as more positive than statistical review ($M = 1.82$, $SD = 0.80$). The interaction between review type and valence was significant, $F(1, 141) = 5.97$, $p = .01$, $\eta^2 = .006$. For negative review, statistical review ($M = 1.94$, $SD = 0.84$) did not differ from narrative review ($M = 1.70$, $SD = 0.74$), $t(68) = 1.26$, $p = .21$. For positive review, narrative review ($M = 6.02$, $SD = 0.71$) was perceived as more positive than narrative review ($M = 5.62$, $SD = 0.85$), $t(73) = 2.22$, $p = .03$.

For statistical review manipulation, positive review ($M = 5.34$, $SD = 1.14$) was perceived as much more positive than negative review ($M = 2.10$, $SD = 1.18$), $t(168) = 18.18$, $p < .001$, $\eta^2 = .66$. Positive review rating was significantly higher than the midpoint (4) of the scale, $t(88) = 11.05$, $p < .001$. Negative review rating was significant

lower than the midpoint of the scale, indicating that negative review was perceived as negative, t (80) = -14.49, $p < .001$.

For narrative review manipulation, positive review ($M = 5.81$, $SD = 0.80$) was perceived as much more positive than negative review ($M = 1.82$, $SD = 0.73$), t (168) = 34.10, $p < .001$, $\eta^2 = .87$. Positive review rating was significantly higher than the midpoint (4) of the scale, t (85) = 23.07, $p < .001$. Negative review rating was significant lower than the midpoint of the scale, indicating that negative review was perceived as negative, t (83) = -25.07, $p < .001$.

Vividness. The vividness imagery was rated with items modified and adapted from Nisbett and Ross (1980) and Baesler and Burgoon (1994). Each two types (personal and general) of four items (vividness, emotiveness, concreteness, and imaginativeness) assessed vividness on a 7-point scale (1 = not at all, 7 = very much). These eight items for statistical vividness had a reliability of $\alpha = 0.93$ and narrative vividness had $\alpha = 0.90$.

A 2 (review type: statistical and narrative review) × 2 (review valence: negative and positive review) between-subject ANOVA showed that review type had a significant main effect, F (1, 141) = 18.74, $p < .001$, $\eta^2 = .12$. Narrative review ($M = 4.64$, $SD = 0.97$) was considered more vivid than statistical review ($M = 3.82$, $SD = 1.30$). Review valence did not have a significant main effect, F (1, 141) = 0.09, $p = .76$, $\eta^2 = .00$. The interaction between review type and valence was not significant, F (1, 141) = 1.51, $p = .12$, $\eta^2 = .015$.

Measurements of Dependent Variables

Review credibility. Flanagin and Metzger (2000) identified 5 items popularly used to measure information credibility (biased-unbiased, trustworthy-untrustworthy, accurate-

inaccurate, believable-unbelievable, and complete-incomplete). These five items (α = 0.80) were used in the current study (e.g., "To me, overall reviews are.....") with a 7-point scale (e.g., 1 = extremely unbelievable, 7 = extremely believable).

Attitudes toward the product. Attitudes were measured with three items (α = 0.97) (good, favorable, and desirable). Participants were asked to indicate their feelings about this product on a 7-point scale (1 = extremely bad, 7 = extremely good).

Behavioral intention to purchase the product. Purchasing intention was measured with 5 items (α = 0.96). Example items included "If I am going to buy a new digital camera in the future, I intend to buy this product" and "If I am going to buy a new digital camera in the future, I would not buy this product" (reverse-coded).

Study 1 Results

Hypothesis 1

Hypothesis 1-a predicted that online statistical review would be more credible than online narrative review when vividness was controlled. The hypothesis was tested with a 2 (review type: statistical and narrative review) × 2 (review valence: negative and positive review) between-subject ANCOVA with vividness as a covariate. The results showed that vividness was not significant, F (1, 140) = 0.20, p = .65, η^2 = .00. Review type had a significant main effect on review credibility, F (1, 140) = 9.32, p = .003, η^2 = .06. Statistical review (M = 4.78, SD = 1.00) was perceived as more credible than narrative review (M = 4.29, SD = 0.77). Thus, the data were consistent with H1-a.

Additionally, review valence had a significant main effect on review credibility, F (1, 140) = 9.43, p = .003, η^2 = .06. Negative review (M = 4.78, SD = 1.05) was perceived as more credible than positive review (M = 4.33, SD = 0.74). The interaction effect of review type by valence was not significant, F (1, 140) = 1.43, p = .23, η^2 = .009.

Hypothesis 1-b predicted that attitudes about the product would be more positive after seeing online statistical review than online narrative review when vividness was controlled. The hypothesis was tested with a 2 (review type: statistical and narrative review) × 2 (review valence: negative and positive review) between-subject ANCOVA with vividness as a covariate. The results showed that vividness was not significant, F (1, 140) = 1.89, p = .17, η^2 = .004. Review type did not have a significant main effect on attitudes about the product, F (1, 140) = 0.84, p = .36, η^2 = .00. Statistical review (M = 3.64, SD = 1.72) and narrative review (M = 3.83, SD = 1.49) did not differ from one another. Thus, the data were not consistent with H1-b.

Additionally, review valence had a significant main effect on attitudes about the product, $F(1, 140) = 341.46, p < .001, \eta^2 = .70$. Positive review ($M = 5.03$, $SD = 0.74$) resulted in more positive attitudes about the product than negative review ($M = 2.34$, $SD = 1.01$). The interaction effect of review type by valence was not significant, $F(1, 140) = 0.81, p = .37, \eta^2 = .00$.

Hypothesis 1-c predicted that intention to purchase a product would be stronger after reading online statistical review than online narrative review when vividness was controlled. A 2 (review type: statistical and narrative review) × 2 (review valence: negative and positive review) between-subject ANCOVA with vividness as a covariate was conducted. The results showed that vividness was not significant, $F(1, 140) = 0.07$, $p = .78, \eta^2 = .00$. Review type did not have a significant main effect on behavioral intention to purchase the product, $F(1, 140) = 0.001, p = .98, \eta^2 = .00$. Statistical review ($M = 3.27$, $SD = 1.64$) and narrative review ($M = 3.27$, $SD = 1.44$) did not differ from one another. Thus, the data were not consistent with H1-c.

Additionally, review valence had a significant main effect on intention to purchase the product, $F(1, 140) = 192.95, p < .001, \eta^2 = .57$. Positive review ($M = 4.40$, $SD = 1.02$) resulted in greater intention than negative review ($M = 2.06$, $SD = 0.99$). The interaction effect of review type by valence was not significant, $F(1, 140) = 1.29, p = .26$, $\eta^2 = .004$.

Hypothesis 2

Hypothesis 2 predicted that the difference between statistical and narrative online review containing negative information would be larger than the difference between

statistical and narrative online review containing positive information. The hypothesis was tested with one way ANOVAs for each of the three dependent variables.

Review credibility. A one way ANOVA comparing the statistical negative, narrative negative, statistical positive, and narrative positive conditions showed that the experimental conditions had a significant main effect on credibility perception of review, $F(3, 141) = 7.59, p < .001, \eta^2 = .14$. A post hoc comparison using Tukey showed that statistical negative review ($M = 5.11$, $SD = 1.20$) was perceived as more credible than narrative negative review ($M = 4.43$, $SD = 0.72$) and that statistical positive review ($M = 4.48$, $SD = 0.65$) did not differ from narrative positive review ($M = 4.17$, $SD = 0.80$). There were no significant differences among narrative negative, statistical positive, and narrative positive reviews.

Attitudes toward the product. A one way ANOVA comparing the statistical negative, narrative negative, statistical positive, and narrative positive review conditions and the control condition showed that the experimental conditions had a significant main effect on attitudes about the product, $F(4, 176) = 92.71, p < .001, \eta^2 = .68$. A post hoc comparison using Tukey showed that statistical negative review condition ($M = 2.16$, $SD = 1.09$) and narrative negative review condition ($M = 2.53$, $SD = 0.90$) did not significantly differ from one another and that statistical positive review condition ($M = 5.00$, $SD = 0.82$) and narrative positive condition ($M = 5.06$, $SD = 0.64$) did not significantly differ from one another. Statistical and narrative negative review conditions differed significantly from statistical and narrative positive review conditions. The control condition ($M = 4.16$, $SD = 0.76$) differed significantly from both negative and positive review conditions.

Because statistical and narrative review conditions did not differ from one another, both conditions were combined across negative and positive review conditions. Which of negative and positive review conditions affected attitudes to a greater extent was examined. As expected, attitudes about the product were less positive in the negative review condition ($M = 2.34$, $SD = 1.01$) than the control condition ($M = 4.16$, $SD = 0.76$), $t\,(104) = 9.52$, $p < .001$, point-biserial $r = .68$. Attitudes about the product were more positive in the positive review condition ($M = 5.03$, $SD = 0.74$) than in the control condition ($M = 4.16$, $SD = 0.76$), $t\,(109) = 5.77$, $p < .001$, point-biserial $r = .48$. Comparing the two correlations (.68 versus .48) indicated that the extent to which the negative review condition decreased attitudes about the product compared to the control condition was greater than the extent to which the positive review condition increased attitudes compared to the control condition, $z = 2.20$, $p = .03$, two-tailed.

Intention to purchase the product. A one way ANOVA comparing the statistical negative, narrative negative, statistical positive, and narrative positive conditions and the control condition showed that the experimental conditions had a significant main effect on behavioral intention to buy the product, $F\,(4, 176) = 48.17$, $p < .001$, $\eta^2 = .52$. A post hoc comparison using Tukey showed that statistical negative condition ($M = 1.96$, $SD = 0.96$) and narrative negative condition ($M = 2.16$, $SD = 1.02$) did not significantly differ from one another and that statistical positive condition ($M = 4.49$, $SD = 1.11$) and narrative positive condition ($M = 4.30$, $SD = 0.91$) did not significantly differ from one another. Statistical and narrative negative conditions differed significantly from statistical and narrative positive conditions. The control condition ($M = 3.20$, $SD = 1.07$) differed significantly from both negative and positive conditions.

Because statistical and narrative review conditions did not differ from one another, both conditions were combined across negative and positive review conditions and comparisons were made in order to examine which of negative and positive review conditions affected behavioral intention to a greater extent. As expected, intention to purchase the product was weaker in the negative review condition ($M = 2.06$, $SD = 0.99$) than in the control condition ($M = 3.20$, $SD = 1.07$), $t\,(104) = 5.49$, $p < .001$, $r = .47$. Intention to purchase the product was higher in the positive review condition ($M = 4.40$, $SD = 1.02$) than in the control condition ($M = 3.20$, $SD = 1.07$), $t\,(109) = 5.49$, $p < .001$, $r = .48$. Comparing the two correlations (.47 versus .48) indicated that the extent to which the negative review condition decreased behavioral intention compared to the control condition did not differ from the extent to which the positive review condition increased behavioral intention compared to the control condition, $z = 0.09$, $p = .93$, two-tailed.

Additional Analyses

The aforementioned ANCOVA and ANOVA results for hypotheses 1 and 2 indicated that vividness was not a significant covariate and that inclusion or exclusion of vividness as a covariate did not change the findings regarding the effects of evidence type on review credibility, attitudes about the product, and intention to purchase the product. In order to further examine the role of vividness, however, exploratory analyses were conducted. Moderated multiple regression analyses examined the possibility of vividness as a moderator for the effects of review type and review valence on review credibility, attitudes about the product, and behavioral intention to purchase the product. Each of the two categorical variables was dummy-coded; statistical review = 0 and narrative review = 1 for review type, negative review = 0 and positive review = 1 for review valence. One

continuous variable, vividness, was mean-centered and multiplied by review type and by review valence to create second-order predictors (i.e., review type × vividness and review valence × vividness) and a third-order predictor (i.e., review type × review valence × vividness) for testing interactions. Hierarchical multiple regression analyses were conducted with the first-order predictors in the first block, the second-order predictors in the second block, and the third-order predictor in the third block. For any significant interactions, simple regression analyses were conducted to probe the interaction pattern.

Review Credibility

The overall model with all the predictors was significant, F (6, 138) = 7.49, $p <$ .001, *adj.* R^2 = .21. The first-order predictors in the first block of the regression model explained a significant amount of variance in review credibility, F (3, 141) = 7.12, $p <$ .001, *adj.* R^2 = .13. Among the first-order predictors, vividness was not significant, β = -.05, t = -0.61, p = .54, *sr* (semipartial correlation) = -.05. On the other hand, review type was significant, β = -.25, t = -2.96, p = .004, *sr* = -.23, indicating that statistical review was perceived as more credible than narrative review. Review valence was significant, β = -.24, t = -3.10, p = .002, *sr* = -.24, indicating that negative review was perceived as more credible than positive review.

The two second-order predictors accounted for a significant amount of variance in review credibility, F_{change} (2, 139) = 3.31, p = .04, R^2_{change} = .04. The interaction of review type by vividness was not significant, B (unstandardized coefficient) = 0.23, t = 1.74, p = .09, *sr* = .13. The interaction of review valence by vividness was significant, B = 0.23, t = 1.98, p = .049, *sr* = .15. Simple slope of vividness was negative for negative review, b = -0.13, p = .22, whereas simple slope of vividness was positive for positive

review, $b = 0.07$, $p = .34$. This second-order interaction was qualified by a third-order interaction, which clarified that the interaction of review type by vividness varied with review valence.

The third-order predictor also accounted for a significant amount of variance in review credibility, F_{change} (1, 138) = 13.66, $p < .001$, $R^2_{change} = .08$. The interaction of review type and review valence with vividness was significant, $B = -0.93$, $t = -3.67$, $p < .001$, $sr = -.27$. For statistical review, simple slopes of vividness were negative for negative review, $b = -0.37$, $p = .01$, and positive for positive review, $b = 0.16$, $p = .049$. For narrative review, simple slopes of vividness were positive for negative review, $b = 0.31$, $p = .009$, and negative for positive review, $b = -0.12$, $p = .44$.

Attitudes toward the Product

The overall model with all the predictors was significant, F (6, 138) = 33.80, $p < .001$, *adj.* $R^2 = .58$. The first-order predictors in the first block of the regression model explained a significant amount of variance in attitudes about the product, F (3, 141) = 64.80, $p < .001$, *adj.* $R^2 = .57$. Among the first-order predictors, vividness was not significant, $\beta = .02$, $t = 0.41$, $p = .68$, $sr = .02$. Review type was not significant, $\beta = -.01$, $t = -0.12$, $p = .91$, $sr = -.01$. Review valence was significant, $\beta = .76$, $t = 13.92$, $p < .001$, $sr = .76$, indicating that attitudes about the product were more positive in the positive review condition than in the negative review condition. The two second-order predictors did not account for a significant amount of variance in attitudes, F_{change} (2, 139) = 2.60, $p = .08$, $R^2_{change} = .015$. The third-order predictor also did not account for a significant amount of variance in attitudes, F_{change} (1, 138) = 0.11, $p = .74$, $R^2_{change} = .00$.

Behavioral Intention to Purchase the Product

The overall model with all the predictors was significant, F (6, 138) = 61.91, p < .001, *adj.* R^2 = .72. The model with the first-order predictors was significant, F (3, 141) = 116.43, p < .001, *adj.* R^2 = .71. Among the first-order predictors, vividness was not significant, β = .07, t = 1.51, p = .13, *sr* = .07. Review type was not significant, β = .04, t = 0.85, p = .40, *sr* = .04. Review valence was significant, β = .84, t = 18.53, p < .001, *sr* = .84, indicating that behavioral intention to purchase the product was greater in positive review condition than in negative review condition.

The two second-order predictors accounted for a significant amount of variance in attitudes, F_{change} (2, 139) = 3.54, p = .04, R^2_{change} = .014. The interaction of review type by vividness was significant, B = -0.32, t = -2.43, p = .02, *sr* = .11. Simple slope of vividness was positive for statistical review, b =.12, p = .21, whereas simple slope of vividness was negative for narrative review, b = -.17, p = .15. The interaction of review valence with vividness was not significant, B = 0.12, t = 0.97, p = .33, *sr* = .04. The third-order predictor also did not account for a significant amount of variance in attitudes, F_{change} (1, 138) = 1.42, p = .24, R^2_{change} = .003.

Study 2

In study 1, participants read only one type of reviews, either statistical or narrative. But because most Web sites in reality present both types of reviews, study 1 might have lacked realism. As a way to replicate study 1 and also to increase realism, study 2 was designed using the same materials as study 1, except that participants in study 2 read both types of reviews.

Study 2 Method

Participants

One hundred forty five students (67.59% women, age $M = 22.70$, $SD = 3.35$) enrolled at Michigan State University participated in the study in exchange of course credit. Of the participants, 76.5% were Caucasian, 8.2% were Asian or Asian American, 3.5% were African American, 1.2% were Hispanic, and 10.6% were other (i.e., unclassifiable, mixed, etc.). Tables 3 and 4 provide more detailed information about the demographic characteristics and online shopping tendencies of participants.

Design and Procedure

This study used a 2 (statistical review valence: positive and negative) × 2 (narrative review valence: positive and negative) between subject design. Unlike study 1 where participants read either statistical or narrative review only, all participants in study 2 read both statistical and narrative review. For example, participants in one of four experimental conditions read statistical positive review and narrative negative review and evaluated each review on review valence and vividness. Then, participants indicated their credibility perception, attitudes about the product, and intention to buy the product. The

experimental materials and measurement items used in study 2 were identical to study 1 (see appendices A, B, and C).

Manipulation Check

Review valence. Ten items assessed the valence of reviews ($\alpha = 0.99$ for statistical review and $\alpha = 0.99$ for narrative review) on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Statistical review positivity was not significantly correlated with narrative review positivity, $r\,(168) = .08$, $p = .29$. For statistical review manipulation, positive review ($M = 5.34$, $SD = 1.14$) was perceived as much more positive than negative review ($M = 2.10$, $SD = 1.18$), $t\,(168) = 18.18$, $p < .001$, $\eta^2 = .66$. Positive review rating was significantly higher than the midpoint (4) of the scale, $t\,(88) = 11.05$, $p < .001$. Negative review rating was significant lower than the midpoint of the scale, indicating that negative review was perceived as negative, $t\,(80) = -14.49$, $p < .001$.

For narrative review manipulation, positive review ($M = 5.81$, $SD = 0.80$) was perceived as much more positive than negative review ($M = 1.82$, $SD = 0.73$), $t\,(168) = 34.10$, $p < .001$, $\eta^2 = .87$. Positive review rating was significantly higher than the midpoint (4) of the scale, $t\,(85) = 23.07$, $p < .001$. Negative review rating was significant lower than the midpoint of the scale, indicating that negative review was perceived as negative, $t\,(83) = -25.07$, $p < .001$.

Vividness

For statistical vividness, the eight items had a reliability of $\alpha = 0.89$ and narrative vividness had $\alpha = 0.92$. Items (e.g., "In general, to what extent were these messages vividly presented?" and "To you, personally, to what extent were these messages concretely presented?") used a 7-point scale (1 = not at all, 7 = very much). Correlation

between statistical review vividness and narrative review vividness was small but significant, r (168) = .28, $p < .001$. T-tests were conducted to see if statistical review and narrative review differed in vividness. The results showed that narrative review (M = 4.73, SD = 1.02) was perceived as more vivid than statistical review (M = 3.67, SD = 1.05), paired sample t (169) = 11.16, $p < .001$, $\eta^2 = .42$. For the vividness rating of narrative review, negative review (M = 5.06, SD = 0.88) was perceived as more vivid than positive review (M = 4.40, SD = 1.04), independent samples t (168) = 4.46, $p < .001$, $\eta^2 = .11$. For vividness rating of statistical review, negative review (M = 3.72, SD = 1.08) and positive review (M = 3.62, SD = 1.01) did not differ, independent samples t (168) = 0.65, $p = .52$, $\eta^2 = .00$.

Measurements of Dependent Variables

Five items ($\alpha = 0.84$) assessed review credibility (e.g., "To me, overall reviews are.....", 1 = extremely biased, 7 = extremely unbiased). Three items ($\alpha = 0.98$) assessed attitudes about the product (e.g., 1 = extremely unfavorable, 7 = extremely favorable). Five items ($\alpha = 0.95$) assessed intention to purchase the product (e.g., "If I am going to buy a new digital camera in the future, I intend to buy this product").

Study 2 Results

Overview

Moderated multiple regression analyses was conducted to examine the persuasive effects of statistical review valence and narrative review valence as well as to test a possibility of vividness as a moderator for the effects of statistical review valence and narrative review valence on review credibility, attitudes about the product, and behavioral intention to purchase the product. Each of the two categorical variables was dummy-coded; statistical negative review = 0 and statistical positive review = 1 for statistical review valence, narrative negative review = 0 and narrative positive review = 1 for narrative review valence. Two continuous variables (statistical review vividness and narrative review vividness) were mean-centered and multiplied by statistical review valence and by narrative review valence to create second-order predictors (i.e., statistical review vividness × statistical review valence, narrative review vividness × narrative review valence). Additionally, a product term of statistical review valence × narrative review valence was created as a second-order predictor. Hierarchical multiple regression analyses were conducted with the first-order predictors in the first block and the second-order predictors in the second block. For any significant interactions, simple regression analyses and post hoc comparisons were conducted to probe the interaction pattern.

Review Credibility

The overall model with all the predictors was significant, $F(7, 159) = 12.48$, $p < .001$, $adj.R^2 = .33$. The first-order predictor in the first block of the regression model accounted for a significant amount of variance in review credibility, $F(4, 162) = 13.74$, $p <. 001$, $adj.R^2 = .24$. Among the first-order predictors, vividness of statistical review was

inversely related to review credibility, $\beta = -.28$, $t = -4.00$, $p < .001$, $sr = -.27$, and vividness of narrative review was positively related to review credibility, $\beta = .39$, $t = 5.19$, $p < .001$, $sr = .35$. Valence of statistical review was also a significant predictor, $\beta = -.19$, $t = -2.73$, $p = .007$, $sr = -.19$, indicating that statistical negative review was perceived as more credible than statistical positive review. On the other hand, valence of narrative review was not a significant predictor, $\beta = -.12$, $t = -1.71$, $p = .09$, $sr = -.12$.

The second-order predictors in the second block of the regression model explained a significant amount of variance in review credibility, F_{change} (3, 159) = 8.31, $p < .001$, $R^2_{change} = .10$. The interaction of narrative review valence with narrative review vividness was not significant, $B = 0.03$, $t = 0.20$, $p = .84$, $sr = .01$. However, the interaction of statistical review valence by statistical review vividness was significant, $B = 0.41$, $t = 3.49$, $p = .001$, $sr = .22$. Simple slope of statistical review vividness was negative for statistical negative review, $b = -0.45$, $p < .001$, whereas simple slope of statistical review vividness was close to zero for statistical positive review, $b = 0.01$, $p = .89$. This finding indicated that for statistical negative review, the more vivid the review was, the less credible the review was. Additionally, the interaction of statistical review valence by narrative review valence was significant, $B = 0.93$, $t = 3.83$, $p < .001$, $sr = .24$, indicating that statistical negative review coupled with narrative negative review ($M = 5.16_a$, $SD = 1.24$) was perceived as more credible than statistical negative review coupled with narrative positive review ($M = 4.24_b$, $SD = 0.73$), statistical positive review coupled with narrative negative review ($M = 4.33_b$, $SD = 0.79$), and statistical positive review coupled with narrative positive review ($M = 4.36_b$, $SD = 0.75$).

Attitudes toward the Product

The overall model with all predictors was significant, F (7, 159) = 23.04, p < .001, $adj.R^2$ = .48. The first-order predictor in the first block of the regression model accounted for a significant amount of variance in attitudes about the product, F (4, 162) = 34.93, p <. 001, $adj.R^2$ = .45. Among the first-order predictors, vividness of statistical review was not significantly related to attitudes about the product, β = .07, t = 1.14., p = .26, sr = .07, and vividness of narrative review was not significant, β = -.07, t = -1.16, p = .25, sr = -.07. On the other hand, valence of statistical review was a significant predictor, β = .37, t = 6.33, p < .001, sr = .36, indicating that attitudes about the product were more positive in the statistical positive review condition than in the statistical negative review condition. Valence of narrative review was a significant predictor, β = .55, t = 9.07, p < .001, sr = .52, indicating that attitudes about the product were more positive in the narrative positive review condition than in the narrative negative review condition.

The second-order predictors in the second block of the regression model explained a significant amount of variance in attitudes about the product, F_{change} (3, 159) = 4.33, p = .006, R^2 change = .04. The interaction of statistical review valence by statistical review vividness was not significant, B = -0.25, t = -1.51, p = .13, sr = -.08. The interaction of statistical review valence by narrative review valence was not significant, B = -0.62, t = -1.81, p = .07, sr = -.10. However, the interaction of narrative review valence by narrative review vividness was significant, B = 0.47, t = 2.55, p = .01, sr = .14. Simple slope of narrative review vividness was negative for narrative negative review, b = -0.37, p = .02, whereas simple slope of narrative review vividness was positive but not significant for narrative positive review, b = 0.10, p = .42. This finding indicated that for narrative negative review, the more vivid the review was, the less positive attitudes were.

Intention to Purchase the Product

The overall model with all predictors was significant, F (7, 159) = 10.10, $p <$ .001, $adj.R^2$ = .28. The first-order predictor in the first block of the regression model accounted for a significant amount of variance in intention to purchase the product, F (4, 162) = 14.84, $p <$. 001, $adj.R^2$ = .25. Among the first-order predictors, vividness of statistical review was not significant, β = .08, t = 1.18, p = .24, sr = .08, and vividness of narrative review was not significant, β = -.03, t = -0.46, p = .64, sr = -.03. On the other hand, valence of statistical review was a significant predictor, β = .25, t = 3.73, $p <$ .001, sr = .25, indicating that intention to purchase the product was stronger in the statistical positive review condition than in the statistical negative review condition. Valence of narrative review was a significant predictor, β = .45, t = 6.28, $p <$ .001, sr = .42, indicating that intention to purchase the product was stronger in the narrative positive review condition than in the narrative negative review condition.

The second-order predictors in the second block of the regression model explained a significant amount of variance in intention to purchase the product, F_{change} (3, 159) = 3.04, p = .03, R^2_{change} = .04. The interaction of statistical review valence by statistical review vividness was not significant, B = 0.05, t = 0.25, p = .80, sr = .02. The interaction of statistical review valence by narrative review valence was not significant, B = -0.47, t = -1.25, p = .21, sr = -.08. However, the interaction of narrative review valence by narrative review vividness was significant, B = 0.51, t = 2.52, p = .01, sr = .16. Simple slope of narrative review vividness was negative for narrative negative review, b = -0.33, p = .03, whereas simple slope of narrative review vividness was positive but not significant for narrative positive review, b = 0.16, p = .26. This finding indicated that for

narrative negative review, the more vivid the review was, the weaker intention to purchase the product was.

Summary of Study 1 and Study 2 Findings

The two main hypotheses of the current study predicted stronger persuasive effects of statistical review than narrative review and expected the difference between statistical and narrative reviews to be greater when the reviews were negative than when they were positive. Individuals considered statistical review more credible than narrative review. Negative review was perceived as more credible than positive review. Statistical negative review was perceived as more credible than narrative negative review, while credibility of statistical positive review did not differ from that of narrative positive review. The data were consistent with hypotheses 1 and 2 only for review credibility, but not for attitudes about the product and intention to purchase the product. Statistical review did not differ from narrative review in affecting attitudes about the product or intention to purchase the product. Compared to the control condition where individuals did not read any reviews, the extent to which negative review affected attitudes (in terms of decreasing positive attitudes) was greater than the extent to which positive reviews affected attitudes (in terms of increasing positive attitudes). But the extent to which negative reviews weakened intention to purchase the product did not differ from the extent to which positive review strengthened intention. For negative review, statistical review and narrative review did not differ in affecting attitudes about the product and intention to purchase the product. Similarly, for positive review, statistical review and narrative review did not differ in affecting attitudes about the product and intention to purchase the product.

Study 1 of current research found that individuals considered narrative reviews to be more vivid than statistical reviews and that vividness was a moderator for the effect of

review type and valence on credibility perception of review and intention to purchase the product. The more likely individuals were to perceive statistical negative review to be vivid, the less likely individuals were to perceive it to be credible, whereas the more likely individuals were to perceive statistical positive review to be vivid, the more likely individuals were to perceive it to be credible. On the other hand, the more likely individuals were to perceive narrative negative review to be vivid, the more likely individuals were to perceive it to be credible, whereas the more likely individuals were to perceive narrative positive review to be vivid, the less likely individuals were to perceive it to be credible. When it comes to purchasing intention, the more likely individuals were to perceive the statistical review to be vivid, the stronger were their intentions to purchase the product. On the other hand, the more likely individuals were to perceive the narrative review to be vivid, the weaker were their intentions to purchase the product.

Additionally, study 2 of current research found that when statistical negative review was accompanied by narrative negative review, the reviews were perceived as the most credible, compared to any other combination of statistical positive review and narrative negative or positive review. The interaction of statistical review vividness with statistical review valence was significant for review credibility, whereas the interaction of narrative review vividness with narrative review valence was significant for attitudes about the product and intention to purchase the product. That is, for statistical negative review, the more likely individuals were to perceive the review to be vivid, the less likely individuals were to perceive it to be credible. For narrative negative review, the more likely individuals were to perceive the review to be vivid, the less positive individuals'

attitudes were about the product and the less likely individuals were to intend to purchase the product.

DISCUSSION

The current research examined persuasive effects of online reviews for the categories of statistical versus narrative and positive versus negative reviews. Past research showed that the usefulness of negative reviews varied with product types (Sen & Lerman, 2007) and consumers' familiarity with a retailer (Chatterjee, 2001). The current study adds review type (summary of numeric ratings as a type of statistical evidence versus consumer comments as a type of narrative evidence) to the literature as another moderator of the effects of negative reviews on credibility perception of reviews. Statistical negative reviews were perceived as more credible than narrative negative reviews, possibly because a large number of ratings indicates greater objectivity, less bias, and numerous people who were familiar with the product. Sen and Lerman (2007) and Chatterjee (2001) argued that the stronger effects of negative reviews for utilitarian products and unfamiliar retailers could be because negative reviews for utilitarian products had greater objectivity and negative reviews of unfamiliar retailers helped with reducing uncertainties about risks. These reasons can be relevant for the stronger credibility of negative reviews containing statistical information, because statistical reviews may have heightened perceptions of objectivity and amount of risk information provided by experienced users of the product.

Because previous research findings have shown greater persuasiveness of negative WOM over positive WOM (Herr et al., 1991; Larczniak et al., 2001), it was not surprising for the current study to find that negative reviews were perceived as more credible than positive review, that statistical negative reviews coupled with narrative negative reviews were the most credible, and that negative reviews affected attitudes

about the product to a greater extent than positive reviews did. Nevertheless, a reason for the current finding could be that a utilitarian product (a digital camera) was used in the current study. Sen and Lerman (2007) showed that consumers were more likely to consider negative reviews useful for utilitarian products (e.g., cell phones and digital cameras) than for hedonic products (e.g., movies and music CDs and DVDs), possibly because reviews for utilitarian products could be more objective and based on actual features and technical functions of the products, whereas reviews for hedonic products could be more subjective and based on individuals' personal preferences. It is possible that by considering negative reviews more credible than positive reviews, participants in the current study might have considered the negative reviews to be genuine concerns and sincere warnings expressed by previous buyers who hope others do not experience the same unpleasantness and disappointment. On the other hand, participants in the current study might have considered the positive reviews to be consistent with the usual product information as advertised by manufacturers.

Another reason for the current finding could be that participants did not know the company that made and sold the digital camera used in the current study (i.e., the digital camera was labeled as "Brand X Camera" with no specific information about who made the camera). Chatterjee (2001) reported that consumers who chose a retailer unfamiliar to them tended to look at more negative reviews than those who chose a familiar retailer, possibly because negative reviews could be more helpful for consumers to avoid risks with an unfamiliar retailer. Chatterjee (2001) further speculated that users of a familiar retailer could be more likely to dismiss negative reviews because they were already satisfied with the retailer. Thus, a future study may examine if the effects of negative

reviews on credibility perception vary with people's familiarity with manufacturers and sellers.

Unlike the difference between statistical and narrative reviews for review credibility, the current study did not find many differences between statistical and narrative reviews for attitudes about the product and intention to purchase the product. One possible explanation could be that attitudes about the product and intention to purchase the product could be influenced by many factors other than the reviews which participants had just read. Naturally, positive reviews improved attitudes about the product and increased intention to purchase the product, while negative reviews decreased them. But attitudes about the product and purchase intention could have depended more on economic status, current necessity of a new product, and opportunities to compare various Web sites, reviews, and other similar products, rather than on how many others rated the product versus how others described their experience with the product.

The current study measured individuals' evaluations of how vividly each review type was presented, predicting that vividness would explain differences between narrative and statistical reviews for their effects on credibility, attitudes about the product, and intention to purchase the product. Although narrative reviews were perceived as more vivid than statistical reviews, it was statistical reviews that were perceived as more credible regardless of vividness. The current findings indicated that vividness did not explain the persuasive effects of narrative reviews, and that vividness did not have direct effects on review credibility, attitudes about a product, and intention to purchase the product.

The role of vividness varied across different review types. Vividness of statistical negative review was inversely related to review credibility, but vividness of statistical positive review was positively related to review credibility. Vividness of narrative negative review was positively related to review credibility, but vividness of narrative positive review was negatively related to review credibility. One possible explanation could be that individuals might have interpreted vividness of statistical negative review to be unreal (e.g., how can this many people react negatively about a product?, how can a product with this many negative review be still advertised for sale?). On the other hand, individuals might have interpreted vividness of narrative negative review as a serious expression of consumers' concerns about the product, whereas vividness of narrative positive review might have led individuals to question the real intention of the review comments. Sen and Lerman (2007) demonstrated that people were more likely to attribute product related motivations to negative review of a utilitarian product than that of a hedonic product. But their study did not differentiate numeric and narrative reviews for motive attribution. The current study findings may imply that people may make different attributions about negative and positive reviews when the reviews are in the forms of numeric ratings versus narrative comments.

Another implication of the current findings regarding vividness is that individuals varied in their perceptions of the vividness of the same review. Such individual variations in vividness were differentially related to review credibility, attitudes about the product, and purchase intention across different types and valences of reviews. For example, the current study found that vividness of statistical review was positively related to purchasing intentions, but vividness of narrative review was negatively related to

purchasing intentions. Vividness of statistical negative review was inversely related to review credibility, but vividness of narrative negative review was inversely related to attitudes about the product and also inversely related to purchasing intentions. Because the current study did not examine what caused such individual variations of vividness of online reviews and subsequent variations in review credibility, attitudes about the product, and purchase intention, it is not easy to explain the findings concerning vividness. One speculation, however, may point to the trend that improvement in Web technologies enables online reviews to be presented with colorful graphics and/or in dynamic forms. How graphically and vividly Web sites present online reviews can vary as well. Individuals' experiences with various Web sites might have led to comparisons of the current study manipulation materials against the review formats of Web sites individuals were already familiar with. Thus, the current research materials might have seemed less vivid than usual for some participants and more vivid for others.

Limitations of Current Research and Suggestions for Future Research

A few limitations of the current study may provide suggestions for future research. First, only one product (i.e., a digital camera) was used in the current study. As previous research showed, product type can moderate the effects of eWOM (e.g., Sen & Lerman, 2007). Furthermore, the current study focused only on product review and not on retailer or seller review concerning shipping and handling quality, return policy, and customer service quality. Future research can examine whether the current findings can be generalized to online reviews of other types of product such as CDs and DVDs of music and movies and reviews of retailers or sellers.

The second limitation may pertain to the number of reviews shown in the statistical review versus the narrative review. Although the current study tried to prepare the equal base rate (i.e., the total number of reviews) in the statistical and narrative review conditions, participants in the current study might have not noticed it. For the statistical review, participants could easily notice that the rating summary was based on 1000 feedback ratings. For the narrative review, although a phrase, "1000 feedback received," was included at the top of 15 narrative review comments, the phrase might have been in too small of a font size for participants to notice. Thus, at this point, it is unclear whether participants in the narrative review condition counted or discounted the base rate when evaluating the review. Additionally, it can be asked if the number (15) of narrative review comments might have affected the current findings. Future research may examine if the varying numbers (e.g., 15 versus 30) of narrative review comments shown to participants make a difference and if there is a threshold of narrative review comments that consumers prefer to read before making a purchase decision.

Third, the current study did not provide opportunities for people to choose which reviews they want to check. When the amount of reviews and feedbacks available is too large to check all, online consumers may chose to read only several review comments and their choices can be guided by various factors. Consumers may choose to read longer reviews because longer reviews are often perceived as more helpful (Chevalier & Mayzlin, 2006; Sen, 2008). Some consumers may prefer the reviews by someone with good reputation. For example, some Web sites provide a way for people to rate the review itself and some consumers may choose to read a review comment that many people already find useful.

CONCLUSION

Advances in technologies and increases in online communication result in growing amounts and diversifying qualities of information available to consumers. Understanding how marketers and consumers adapt to any new modes of online communication and how they process various forms of online information can remain constant challenges as the speed of technology improvement increases. The current study findings can have some implications for scientific research, commercial practice, and uses of online reviews as a form of eWOM. Careful management of negative reviews can be a significant way to influence attitudes and intention to purchase about a given product. Effective control and presentation of numeric ratings as statistical reviews can be important ways to increase review credibility and attract consumers to check the reviews on a given Web site.

Table 1 Demographic Information (Study 1)

	Category	Number of Subject	Percentage
Gender (Age M = 22.35, SD = 3.09)	Male	57	31.5
	Female	124	68.5
Grade	Sophomore	4	2.2
	Junior	69	38.5
	Senior	51	28.5
	Graduate	55	30.7
Ethnicity	Caucasian/European American	123	69.5
	Hispanic	1	0.6
	African American	8	4.5
	Pacific Islander	4	2.3
	Asian American	15	8.5
	Mixed	1	0.6
	Other	25	14.1

* n = 179

Table 2 Online shopping Tendency (Study 1)

	M	*Median*	*SD*
Average spending (per month)	59.83 (U. S. dollar)	30 (U. S. dollar)	112.11
Average purchase (per month)	2.27 (times)	1 (times)	5.86
To what extent you believe online review is useful (1 = lowest and 7 = highest)	5.45	6	0.97
To what extend you believe it is useful to rely on online reviews for purchasing decisions (1 = lowest and 7 = highest)	4.96	5	1.36

Table 3 Demographic Information (Study 2)

	Category	Number of Subject	Percentage
Gender (Age M = 21.48, SD = 2.07)	Male	55	32.5
	Female	114	67.5
Grade	Freshman	2	1.2
	Sophomore	37	21.8
	Junior	50	29.4
	Senior	73	42.9
	Graduate	8	4.7
Ethnicity	Caucasian/European American	130	76.9
	Hispanic	2	1.2
	African American	6	3.6
	Asian American	14	8.3
	Mixed	4	2.4
	Other	13	7.7

* $n = 170$

Table 4 Online shopping Tendency (Study 2)

	M	*Median*	*SD*
Average spending (per month)	45.77 (U. S. dollar)	25 (U. S. dollar)	53.42
Average purchase (per month)	1.43 (times)	0.83 (times)	2.28
To what extent you believe online review is useful (1 = lowest and 7 = highest)	5.49	6	0.93
To what extend you believe it is useful to rely on online reviews for purchasing decisions (1 = lowest and 7 = highest)	5.01	5	1.22

Table 5 Comparisons of Experimental Conditions in Study 1 and Study 2

	n	Review Credibility[#]	Attitudes about a Product[##]	Intention to Purchase a Product[###]
Statistical Negative Review coupled with Narrative Negative Review	39	5.16_{q} (1.24)	2.15_{x} (0.98)	1.93_{a} (0.86)
Statistical Negative Review only	36	5.11_{q} (1.20)	2.16_{x} (1.09)	1.96_{a} (0.96)
Narrative Negative Review only	34	4.43_{r} (0.72)	2.53_{x} (0.90)	2.17_{a} (1.02)
Statistical Positive Review coupled with Narrative Negative Review	45	4.33_{r} (0.78)	3.69_{y} (1.34)	3.03_{b} (1.40)
Control group – no review included	36	--	4.16_{y} (0.76)	3.20_{bc} (1.07)
Statistical Negative Review coupled with Narrative Positive Review	42	4.24_{r} (0.73)	4.19_{y} (1.25)	3.47_{bc} (1.37)
Statistical Positive Review coupled with Narrative Positive Review	44	4.37_{r} (0.75)	4.99_{z} (0.79)	3.89_{cd} (1.09)
Statistical Positive Review only	39	4.48_{r} (0.65)	5.00_{z} (0.82)	4.49_{d} (1.11)
Narrative Positive Review only	36	4.17_{r} (0.80)	5.06_{z} (0.64)	4.30_{d} (0.91)

Note. Standard deviations are in parentheses.
Means not sharing a same subscript within each column differ from one another at $p < .05$.
[#]ANOVA with credibility as the dependent variable, $F(7, 307) = 7.24$, $p < .001$, $\eta^2 = .14$.
[##]ANOVA with attitudes as the dependent variable, $F(8, 342) = 57.08$, $p < .001$, $\eta^2 = .57$.
[##]ANOVA with intention as the dependent variable, $F(8, 342) = 28.96$, $p < .001$, $\eta^2 = .40$.

APPENDIX A
Background Information

Please answer the following questions about yourself.

B1. Have you ever seen online reviews? (for example, feedback from *Amazon* or *eBay*)
☐ Yes ☐ No

B2. Have you ever bought any product online?
☐ Yes ☐ No

B2a. If yes, how often do you shop online?
_____times per ☐ week ☐ month ☐ year

B2b. If yes, how much do you spend while shopping online?
$ _____ per ☐ week ☐ month ☐ year

Please indicate the extent to which you agree or disagree with each sentence below.

B3. I use online reviews to decide what I purchase with **online shopping**.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

B4. I use online reviews to decide what I purchase with **offline shopping**.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

B5. I prefer the website with online reviews rather than the website without online reviews.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

B6. I often check online reviews to get information about products.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

B7. I have to check online reviews before any purchase is made.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

B8. I usually check online reviews before finalizing my purchase.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

B9. I believe it is useful to rely on online reviews for purchasing decisions.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

B10. I believe the information from online reviews are useful.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Please answer the following questions about yourself.

D1. Age _____

D2. Gender ☐ Male ☐ Female

D3. Major _____

D4. Freshman____ Sophomore____ Junior____ Senior____ Graduate _____

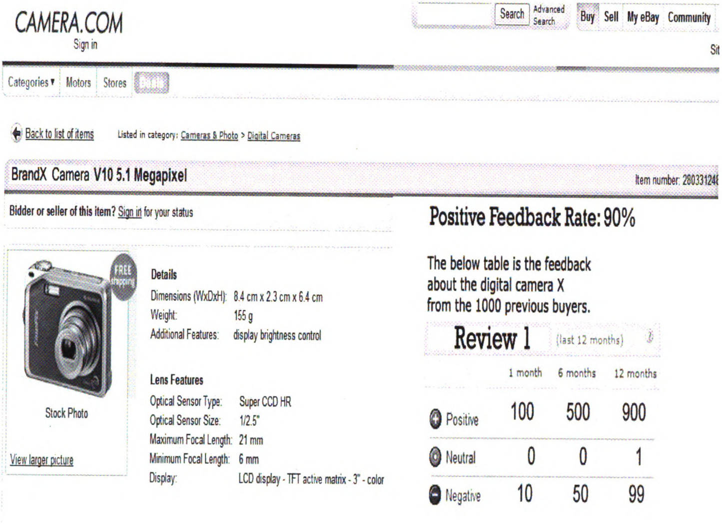
D5. Please indicate your ethnicity (check one)

_____ Caucasian/European American _____ Hispanic
_____ African American _____ Pacific Islander
_____ Native American _____ Mixed (please specify _____)
_____ Asian American _____ Other (please specify_____)

Please go on to the next page

APPENDIX B
2 x 2 design

Positive Statistic Evidence



BrandX Camera V10 5.1 Megapixel

Item number: 28033124

Bidder or seller of this item? Sign in for your status

Details

Dimensions (WxDxH): 8.4 cm x 2.3 cm x 6.4 cm
Weight: 155 g
Additional Features: display brightness control

Lens Features

Optical Sensor Type: Super CCD HR
Optical Sensor Size: 1/2.5"
Maximum Focal Length: 21 mm
Minimum Focal Length: 6 mm
Display: LCD display - TFT active matrix - 3" - color

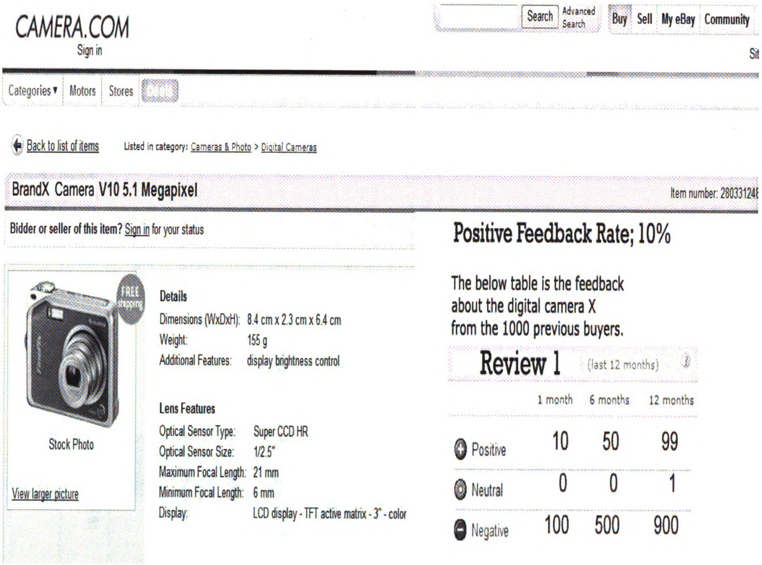
Positive Feedback Rate: 90%

The below table is the feedback about the digital camera X from the 1000 previous buyers.

Review 1 (last 12 months)

	1 month	6 months	12 months
⊕ Positive	100	500	900
○ Neutral	0	0	1
⊖ Negative	10	50	99

Narrative Statistic Evidence



Listed in category: Cameras & Photo > Digital Cameras

BrandX Camera V10 5.1 Megapixel

Item number: 28033124

Bidder or seller of this item? Sign in for your status

Details

Dimensions (WxDxH):	8.4 cm x 2.3 cm x 6.4 cm
Weight:	155 g
Additional Features:	display brightness control

Lens Features

Optical Sensor Type:	Super CCD HR
Optical Sensor Size:	1/2.5"
Maximum Focal Length:	21 mm
Minimum Focal Length:	6 mm
Display:	LCD display - TFT active matrix - 3" - color

Positive Feedback Rate; 10%

The below table is the feedback
about the digital camera X
from the 1000 previous buyers.

Review 1 (last 12 months)

	1 month	6 months	12 months
Positive	10	50	99
Neutral	0	0	1
Negative	100	500	900

Positive Narrative Evidence

Review 2 The below is the part of feedback about the digital camera X from the previous buyers.

1000 Feedback received (viewing 1-25)

Feedback	From Buyer
Amazing quality.	Buyer: cwhite5104 (6)
This is not that heavy so that I can carry easily.	Buyer: jmhalekw (203 ★)
This is the one I am looking for.	Buyer: thor_chick87 (39 ☆)
Beautiful design!	Buyer: kevinp1020 (36 ☆)
It's acceptable.	Buyer: star420_3 (224 ★)
When I used this at the birthday party, everyone loved their face in the camera.	Buyer: aceohartslike007 (25 ☆)
Nice one. I recommend this to my pals.	Buyer: gsharky (5)
All functions are fantastic!	Buyer: 7442joem (20 ☆)
This was my anniversary gift and my husband loved it. It works well.	Buyer: susanandrand;98 (50 ★)
NOT BAD	Buyer: tc1015 (66 ★)
I am pleased with the quality of the picture..	Buyer: ruppel1969 (104 ★)
Useful product. I am happy with my purchase.	Buyer: pdmer309 (3)
This camera changed my weekend in good way	Buyer: golfer110751 (104 ★)
I will recommend this to everyone.	Buyer: 2.slo (151 ★)
Nice appearance, this is what I wanted	Buyer: lil_jimmy (169 ★)

Negative Narrative Evidence

Review 2 The below is the part of feedback about the digital camera X from the previous buyers.

1000 Feedback received (viewing 1-25)

Feedback	From Buyer
⊖ Disappointing quality.	Buyer: cwhite5104 (6)
⊖ This is so heavy that I can not carry easily.	Buyer: jimhalekw (203 ☆)
⊖ This isn't the one I am looking for.	Buyer: thor_chick87 (39 ☆)
⊖ Awful design!	Buyer: kevmp1020 (36 ☆)
⊖ It's acceptable.	Buyer: star420_3 (224 ★)
⊖ When I used this at the birthday party, no one liked their face in the camera.	Buyer: aceohartslike007 (25 ☆)
⊖ Bad one. I can't recommend this to my pals.	Buyer: gsharky (5)
⊖ All functions are horrible!	Buyer: 7442;cem (20 ☆)
⊖ This was my anniversary gift, but my husband hated it.It works badly.	Buyer: susanandrandy98 (50 ★)
⊖ NOT BAD	Buyer: tc1015 (66 ★)
⊖ I am not pleased with the quality of the picture_	Buyer: ruppel1969 (104 ★)
⊖ Not useful product. I regret my purchase.	Buyer: pdfner309 (3)
⊖ This camera ruined my weekend	Buyer: golfer110751 (134 ★)
⊖ I won't recommend this to anyone.	Buyer: 2 slo (151 ★)
⊖ Disappointing appearance, this is not what I wanted.	Buyer: lilyjimmy (169 ★)

APPENDIX C
Vividness / Credibility / Attitudes about a Product / Purchase Intention

*After reading **Review 1**,*
Please indicate the extent to which you agree or disagree with each statement below.

MS1. Overall reviews are positive.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MS2. Almost all of reviews are recommending this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MS3. People who contribute reviews are mostly satisfied with this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MS4. Overall reviews are negative.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MS5. Almost all of reviews are not recommending this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MS6. People who contribute reviews are mostly unsatisfied with this product

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MS7. It seems that people generally recommend this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MS8. It seems that people do not generally recommend this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

*Please indicate your feeling about **Review 1** with each statement below.*

VGS1. In general, to what extent were these messages **vividly** presented?

Not at all 1———2———3———4———5———6———7 Very much

VPS1. To you, personally, to what extent were these messages **vividly** presented?

Not at all 1———2———3———4———5———6———7 Very much

VGS2. In general, to what extent were these messages **emotionally** presented?

Not at all 1———2———3———4———5———6———7 Very much

VPS2. To you, personally, to what extent were these messages **emotionally** presented?

Not at all 1———2———3———4———5———6———7 Very much

VGS3. In general, to what extent were these messages **concretely** presented?

Not at all 1———2———3———4———5———6———7 Very much

VPS3. To you, personally, to what extent were these messages **concretely** presented?

Not at all 1———2———3———4———5———6———7 Very much

VGS4. In general, to what extent were these messages **imaginably** presented?

Not at all 1———2———3———4———5———6———7 Very much

VPS4. To you, personally, to what extent were these messages **imaginably** presented?

Not at all 1———2———3———4———5———6———7 Very much

PS1. How **persuasive** do you think these messages were?

Not at all 1———2———3———4———5———6———7 Very much

PS2. To what extent do you think your opinions on this product were **influenced** by these messages?

Not at all 1———2———3———4———5———6———7 Very much

*After reading **Review 2**,*
Please indicate the extent to which you agree or disagree with each statement below.

MN1. Overall reviews are positive.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MN2. Almost all of reviews are recommending this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MN3. People who contribute reviews are mostly satisfied with this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MN4. Overall reviews are negative.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MN5. Almost all of reviews are not recommending this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MN6. People who contribute reviews are mostly unsatisfied with this product

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MN7. It seems that people generally recommend this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

MN8. It seems that people do not generally recommend this product.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

*Please indicate your feeling **about Review 2** with each statement below*

VGN1. In general, to what extent were these messages **vividly** presented?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

VPN1. To you, personally, to what extent were these messages **vividly** presented?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

VGN2. In general, to what extent were these messages **emotionally** presented?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

VPN2. To you, personally, to what extent were these messages **emotionally** presented?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

VGN3. In general, to what extent were these messages **concretely** presented?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

VPN3. To you, personally, to what extent were these messages **concretely** presented?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

VGN4. In general, to what extent were these messages **imaginably** presented?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

VPN4. To you, personally, to what extent were these messages **imaginably** presented?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

PN1. How **persuasive** do you think these messages were?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

PN2. To what extent do you think your opinions on this product were **influenced** by these messages?

Not at all 1-------2-------3-------4-------5-------6-------7 Very much

*After reading **both Review 1 and Review 2**, what do you think about these **reviews**?*

C1. To me, overall reviews are,

Extremely Biased	Very Biased	Somewhat Biased	Neutral	Somewhat Unbiased	Very Unbiased	Extremely Unbiased
1	2	3	4	5	6	7

C2. To me, overall reviews are,

Extremely Trustworthy	Very Trustworthy	Somewhat Trustworthy	Neutral	Somewhat Untrustworthy	Very Untrustworthy	Extremely Untrustworthy
1	2	3	4	5	6	7

C3. To me, overall reviews are,

Extremely Inaccurate	Very Inaccurate	Somewhat Inaccurate	Neutral	Somewhat Accurate	Very Accurate	Extremely Accurate
1	2	3	4	5	6	7

C4. To me, overall reviews are,

Extremely Unbelievable	Very Unbelievable	Somewhat Unbelievable	Neutral	Somewhat Believable	Very Believable	Extremely Believable
1	2	3	4	5	6	7

C5. To me, overall reviews are,

Extremely Incomplete	Very Incomplete	Somewhat Incomplete	Neutral	Somewhat Complete	Very Complete	Extremely Complete
1	2	3	4	5	6	7

*What do you think about **this product**? Please **imagine** you need to buy a new digital camera, then indicate your preference on the 7-point scale.*

A1. Please indicate your feelings about **this product**, if it is on the market.

Extremely Bad	Very Bad	Somewhat Bad	Neutral	Somewhat Good	Very Good	Extremely Good
1	2	3	4	5	6	7

A2. Please indicate your feelings about **this product**, if it is on the market.

Extremely Unfavorable	Very Unfavorable	Somewhat Unfavorable	Neutral	Somewhat Favorable	Very Favorable	Extremely Favorable
1	2	3	4	5	6	7

A3. Please indicate your feelings about **this product**, if it is on the market.

Extremely Undesirable	Very Undesirable	Somewhat Undesirable	Neutral	Somewhat Desirable	Very Desirable	Extremely Desirable
1	2	3	4	5	6	7

Please imagine that you may be looking to buy a digital camera in the near future and then indicate the extent to which you agree or disagree with each sentence below. Please circle a number that best reflects your agreement level.

BI1. If I am going to buy a new digital camera in the future, I intend to buy this product

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

BI2. If I am going to buy a new digital camera in the future, I have no plan to buy this product

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

BI3. If I am going to buy a new digital camera in the future, I have it in mind to buy this product

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

BI4. If I am going to buy a new digital camera in the future, I mean to buy this product

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

BI5. If I am going to buy a new digital camera in the future, I would not buy this product

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Thank you for participating in this study

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