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Deciphering Individuals' Preference for User Generated Content: An Empirical Test of the Impact of Personality on Users' Processing of Online Review Information

Completed Research Paper

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Abstract

The explosive growth of user generated content presents a window of opportunity for online service providers (i.e., online review website) to utilize both forms of review information, namely numerical rating and opinionated review to facilitate trust building with users. Nevertheless, users' trust in a website can be undermined by the irreconcilable dissonance between both forms of review information and their personality preferences. Consequently, it is important for websites to personalize the provision of numerical rating and opinionated review in order to convey trustworthiness to users through online consumer review. To empirically validate our research mode, we conducted a field study on a custom developed online review website with a sample of 170 college students. Results suggest that dissonance between numerical rating and opinionated review, as well as individuals' preferences for self-reference and content relevance when processing online review information moderate the positive relationship between online consumer review and trust.

Keywords: Online Consumer Review, Trust, Personality Preference, Cognitive Dissonance, MBTI

Introduction

Individuals tend to rely on trust as a risk alleviating method to reduce their social uncertainty especially in online context (Gefen and Straub 2004). When faced with a lack of control over a service provider, trust helps individuals rule out possible undesirable or even unethical opportunistic behavior from the service provider (Fukuyama 1995; Hart and Saunders 1997; Kumar 1996; Luhmann et al. 1979) based on their beliefs of the credibility and benevolence of this provider (Dimoka 2010; Pavlou and Dimoka 2006). In an online setting, trust is one of the most essential determinants of influencing user intention (Gefen and Straub 2004; Gefen 2000; Jarvenpaa et al. 1999; Kim et al. 2009) and retention (Fang et al. 2014; Gefen 2002; Kim et al. 2009; Qureshi et al. 2009).

Witnessing the recent growth in user-generated content in the likes of online consumer reviews, major e-commerce websites and online review websites have begun to utilize their abundant consumer reviews to bolster users' trust (Ertimur and Gilly 2012; Lawrence et al. 2013; Thompson and Malaviya 2013). Online consumer review opens a new window of opportunity for online service providers to address the lack of social context and continuous reciprocity online (Gefen 2000; Kollock 1999; Reichheld and Scheffer 2000) by inducing *social presence*, and in turn facilitate the trust building between users and providers (Gefen and Straub 2004). In comparison to former trust ensuring methods, such as offering warranties (Aiken and Boush 2006; Yen 2006), establishing reputation (Biswas and Biswas 2004; Kim et al. 2004), adopting third-party endorsements (Aiken and Boush 2006; Biswas and Biswas 2004; Wang et al. 2004; Yen 2006), and investing in advertisement (Aiken and Boush 2006; Biswas and Biswas 2004), utilizing online consumer reviews has three main advantages. First, online consumer reviews are timely and free to use (Ertimur and Gilly 2012; Lawrence et al. 2013; Thompson and Malaviya 2013). Second, online consumer reviews can easily draw users' intention since the user-generated content is deemed a reliable source of informational reference for decision making (Jabr and Zheng 2013). In fact, approximately 92% of consumers prefer consulting online consumer reviews prior to making purchase decision (ChannelAdvisor 2010). Last but not least, it has been found that most individuals (i.e., 92.3%) choose to trust information provided by peers rather than that supplied by the service providers (eMarketer 2010), meaning users often regard online consumer reviews as highly trustworthy. Largely due to the aforementioned merits of online consumer reviews, leading e-commerce website (i.e., Amazon) and online review website (i.e., Yelp) have utilized online consumer reviews in two distinct forms: *numerical rating* and *opinionated review*. Specifically, both websites provide a breakdown of consumers' ratings consisting of an average rating, and a histogram of rating distribution across 5 categories (1 – 5 stars), as well as a summary of consumers' opinions in terms of most frequently mentioned phrases (see Figure 1). Nonetheless, there is a paucity of prior research that distinguishes between *numerical rating* and *opinionated review* (Sparks and Browning 2011). More specifically, there is limited knowledge regarding how consumers' trust can be influenced by possible dissonance between these two distinct forms and their individual preferences to either form, a research gap we seek to address.

Tam and Ho's (2006) seminal work emphasized the importance of considering individuals' preferences when predicting their responses to online informational stimuli. Combining *self-referent effect* (Kircher et al. 2000; Rogers et al. 1977) and *elaboration likelihood theory* (Petty and Cacioppo 1986), Tam and Ho (2006) proposed two essential components of *preference structure*: *self-reference*, which refers to the extent to which online information coincide with an individual's self-schema (e.g., autobiography, values, emotions and attitudes), and *content relevance*, which is defined as the relevance of online information to an individual's information processing goal. Catering for these two dimensions of preference structure by offering personalized content is expected to heighten attention to information (Kelley et al. 2002), facilitate information recall (Rogers et al. 1977; Symons and Johnson 1997), encourage swift decision making (Chu and Spires 2000; Todd and Benbasat 2000), enhance the acceptance of the service offered by a website (Hong and Zinkhan 1995), and most importantly, reinforce trust in service providers (i.e., online review website) (Beldad et al. 2010; Briggs et al. 2004; Koufaris and Hampton-Sosa 2004). As a result, we anticipate that instead of always offering both forms of consumer reviews (i.e., numerical rating and opinionated review) simultaneously, personalizing the provision of a particular form in accordance with each user's *preference structure* should lead to heightened trust.

Myers-Briggs Type Indicator (MBTI) (Myers and McCaulley 1988; Myers and Myers 1995) offered a theoretical foundation for both researchers and practitioners to identify individuals *preference structure*. The MBTI posited that "we all have specific preferences in the way we construe our experiences, and these

preferences underlie our interests, needs, values, and motivation” (Kaplan and Saccuzzo 2012, p. 519), and suggested four types of psychological preferences.

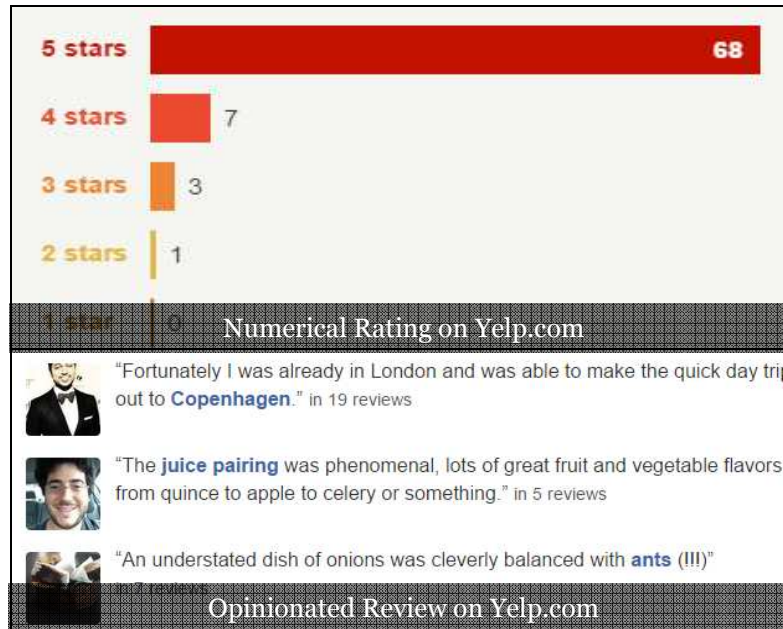


Figure 1. Examples of Numerical Rating and Opinionated Review

Grounded on the positive influence of user generated content in trust building process, we first aim to explore how the two forms of online consumer reviews (i.e., *numerical ratings* and *opinionated reviews*) enhance users' trust. We then investigate whether possible dissonance between *numerical rating* and *opinionated review* would reduce users' trust on the basis of *cognitive dissonance theory* (Festinger 1962, 2010). Further, we draw on the *preference structure theory* and MBTI to articulate individuals' varying responses to *numerical ratings* and *opinionated reviews* regarding trustworthiness in accordance with their psychological preferences (i.e., preference for self-reference and preference for content relevance).

We believe that fulfilling the aforementioned research goals will enhance our understanding of how the provision of *numerical ratings* and *opinionated reviews* can be strategically personalized in accordance with online users' preferences for trust building purposes. This insight will allow us to make a concrete contribution to online consumer review research, and help online review websites better convey trustworthiness to their users.

Theory Development

Online Consumer Review and Trust

Trust is defined as “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another” (Rousseau et al. 1998, p. 395). The determinant of trust building is reliable expectation between two parties established through continuous two-way interaction (Blau 1964; Luhmann 1979). Trust plays an influential role in encouraging individuals to engage in interactions and transactions on a website (Bart et al. 2005; Gefen and Straub 2003; Gefen et al. 2003; Van der Heijden et al. 2003; Koh et al. 2012; Mukherjee and Nath 2007) and inducing e-loyalty (Forgas-Coll et al. 2013; Gefen 2002; Gupta and Kabadayi 2010).

Trust building requires a continuous sense of reciprocity. This prolonged process however is hindered in an online setting due to the absence of a social context (Gefen 2000; Kollock 1999; Reichheld and Scheffer 2000). According to the *social presence theory* (Short et al. 1976), websites may induce social presence, which refers to “the extent to which a medium allows users to experience others as being psychologically present” (Gefen and Straub 2004, p. 11), to make up for the absence of a social context, and enhance users' trust (Gefen and Straub 2004). Prior studies showed that user generated content is effective in

convincing users of the trustworthiness of a website. For instance, Dellarocas (2003) demonstrated that facilitating the network of eWOM helps an e-commerce website build consumer trust. Gefen and Straub (2004) also hinted that providing online consumer reviews helps an e-commerce website establish its credibility and benevolence, which in turn reinforce consumers' trust. Another study found that cues from user generated content can better convey the trustworthiness of the website even if the creator is anonymous (Pan and Chiou 2011). Jabr and Zheng (2013) summed up the appeal of user generated content by positing that information that comes from peer consumers is more trustworthy compared to firm generated information.

Prior literature also hinted that when investigating the effect of online consumer review on trust, *numerical rating* should be distinguished from *opinionated review* so as to account for the possible influence of users' goals and preferences (Sparks and Browning 2011). Specifically, numerical rating often takes the form of ordinal rating (e.g., a certain number of stars out of five or ten). Because it is specific and concise, it can be especially effective when users wish to take a shortcut when making swift evaluations or decisions (Fiske and Taylor 2013). *Numerical rating* also caters to categorical thinking (Macrae and Bodenhausen 2001), and tends to positively influence users' trust and decision making (Sparks and Browning 2011). On the other hand, *opinionated review* is usually in the form of written comments, thereby offering background information and contextual reasoning behind each reviewer's opinion. As a result, *opinionated review* requires more cognitive effort to consume and also leaves room for personal interpretation (Park and Kim 2008; Park and Lee 2008). Nonetheless, users often regard *opinionated review* as trustworthy (Jabr and Zheng 2013) and this trust effect is spilled over to the website that hosts the reviews (Sparks and Browning 2011) especially for the users who are willing to inspect the arguments and rely more on their interpretation (Park and Kim 2008; Park and Lee 2008). Therefore, both *numerical rating* and *opinionated review* are expected to heighten a user's trust towards a website.

Hypothesis 1: User generated numerical rating provided on a website positively influences individuals' trust in this website.

Hypothesis 2: User generated opinionated review provided on a website positively influences individuals' trust in this website.

Cognitive Dissonance

Cognitive dissonance refers to a situation where an individual faces conflicting attitudes, beliefs or behaviors (Cooper 2007; Festinger 1962, 2010). Cognitive dissonance theory posits that individuals strive to restore their internal consistency when confronted with conflicting information (Cooper 2007; Festinger 1962, 2010). Particularly, if a website presents conflicting information, its users tend to resolve the dissonance by changing their attitudes and beliefs towards this website and regard it as untrustworthy (Festinger 1962, 2010).

It is unlikely for the difference between *numerical rating* and *opinionated review* to be unnoticed by users even if the former and the latter coincide in valence. Particularly, *numerical rating* is quantitative in nature whereas *opinionated review* consists of qualitative information. Moreover, *numerical rating* represents an overall attitude while *opinionated review* contains detailed reasoning and opinions. It is even more difficult for a user to reconcile the profound discrepancy between *numerical rating* and *opinionated review* if both are highlighted at the same time by a website. Therefore, even though both *numerical rating* and *opinionated review* help establish the trustworthiness of a website on their own (Jabr and Zheng 2013; Sparks and Browning 2011), presenting both side by side may undermine their positive influence on trust due to the potential discrepancy between *numerical rating* and *opinionated review*. As a result, the coexistence of *numerical rating* and *opinionated review* can lead to *antagonistic interaction*, in which the direction of the interaction effect between two predictors is opposite to that of their direct effects (Frazier et al. 2004). Since both *numerical rating* and *opinionated review* are expected to be positive predictors of trust, we hypothesize that,

Hypothesis 3: The coexistence of user generated numerical rating and opinionated review on a website negatively influences individuals' trust in this website.

MBTI and Preference Structure

MBTI (Myers and McCaulley 1988) is developed on the basis of Jung's (1971) seminal work in order to identify and measure individual psychological preferences in cognition and decision making, which also "underlie our interests, needs, values, and motivation" (Kaplan and Saccuzzo 2012, p. 519). According to MBTI, each individual's psychological preference comprises four bipolar dimensions, namely *extraversion vs. introversion*, *sensing vs. intuition*, *thinking vs. feeling*, and *judging vs. perceiving* (Myers et al. 1985). Each of these four dichotomies reflects the direction of an aspect of preference (e.g., extraversion vs. introversion) since direction is deemed more important comparing to degree (e.g., very clear vs. slight) (Myers et al. 1998). According to the *preference structure theory*, self-reference and content relevance are expected to influence individuals' information processing and alter the effect of information in various forms (Tam and Ho 2006). In the next sections, we seek to unveil how four MBTI dichotomies coincide with *the self-reference* and *content relevance* aspects of preference and in turn influence the individuals' preferences for different forms of online reviews (i.e., numerical rating and opinionated review) (Kroeger and Thuesen 2013). As a result of providing the form of review compatible with individuals' preferences via personalization, a website is able to earn more trust from its users (Beldad et al. 2010; Briggs et al. 2004; Koufaris and Hampton-Sosa 2004).

Self-Reference

Kircher et al. (2000) stated that "Processing of self-relevant information and self-knowledge is regarded as distinct from processing objective information" (p. 133), highlighting the importance of personalizing information in accordance with an individual's self-reference in order to make the information more salient (Tam and Ho 2006). Two dichotomies of MBTI, namely *extraversion vs. introversion* and *thinking vs. feeling*, reflect an individual's preference in inductive process and specify which type of information is regarded relevant to his/her self-schema. For instance, the *extraversion vs. introversion* dichotomy represents where an individual draws his/her energy from and what his/her focus is (Kroeger and Thuesen 2013). The *extraversion* types are outward-turning therefore prefer drawing energy from the outer world of people and objects whereas the *introversion* types are inward-turning thus tend to draw energy from the inner world of concepts and ideas (Harrington and Loffredo 2010; Kroeger and Thuesen 2013). *Extraversion* types often reflect their interactions in the outer world and act accordingly while *introversion* types seek outer validation of their own thoughts and reflect on the outcome of validation (Nettle 2006). When inspecting online consumer reviews, *extraversion* types likely focus on *opinionated review* rather than *numerical rating* due to their preference for others' actions and insights, which is available in the former. On the other hand, *introversion* types prefer *numerical rating over opinionated review* when referring to online consumer reviews because *introversion* types tend to limit their social interaction and exposure in order to focus on their own thoughts and ideas (Harrington and Loffredo 2010; Kroeger and Thuesen 2013). Therefore, it is plausible that a website that emphasizes *opinionated review* for *extraversion* types while highlighting *numerical rating* for *introversion* types would be deemed more trustworthy by its users. By catering to the preferences of its users, the website demonstrates its competence and benevolence (Beldad et al. 2010; Briggs et al. 2004; Koufaris and Hampton-Sosa 2004). In other words, the direction of *extraversion vs. introversion* dichotomy can shape the influences of both *numerical rating* and *opinionated review* on users' trust in a website. As a result, we predict that,

Hypothesis 4: An individual's propensity towards introversion as opposed to extraversion positively moderates the positive relationship between user generated numerical rating provided on a website and his/her trust in this website.

Hypothesis 5: An individual's propensity towards introversion as opposed to extraversion negatively moderates the positive relationship between user generated opinionated review provided on a website and his/her trust in this website.

In addition, the *thinking vs. feeling* dichotomy reflects an individual's preference for decision making (Kroeger and Thuesen 2013). The *thinking* types prefer grounding their decisions on impersonal logical reasoning and scrutinizing others' arguments before reaching a conclusion (Kroeger and Thuesen 2013). Conceivably, when presented with online consumer reviews, thinking types enjoy going through *opinionated review* instead of *numerical rating* because the arguments in written comments are

necessary for thinking types to make reasonable and logical decisions. On the contrary, *feeling* types seek to achieve harmony and consensus through their decisions (Kroeger and Thuesen 2013). Because *numerical rating* can better represent consensus in online consumer reviews as compared to *opinionated review* (even consumers who express polarizing opinions could award similar ratings), users of the feeling type are likely to feel more at home with the former. Conversely, users of the thinking type are likely to feel more at ease with the opinionated review. Therefore, the influences of both *numerical rating* and *opinionated review* on users' trust in a website are affected by the direction of the *thinking vs. feeling* dichotomy. As a result, we hypothesize that,

Hypothesis 6: An individual's propensity towards feeling as opposed to thinking positively moderates the positive relationship between user generated numerical rating provided on a website and his/her trust in this website.

Hypothesis 7: An individual's propensity towards feeling as opposed to thinking negatively moderates the positive relationship between user generated opinionated review provided on a website and his/her trust in this website.

Content Relevance

Content relevance refers to the extent to which information is relevant to an individual's processing goal (Tam and Ho 2006). Persuasion research in social cognition stipulates that information that is relevant to an individual's processing goal is more effective in heightening elaboration compared to irrelevant information (Petty and Cacioppo 1986). Prior literature also suggests that task relevant information or design elements on a website tend to attract more attention (Folk et al. 1992; Yantis and Egeth 1999) and result in stronger recall (Tam and Ho 2006). The other two dichotomies of MBTI, namely *sensing vs. intuition* and *judging vs. perceiving*, represent an individual's preference in deductive process and help specify which type of information is regarded relevant to his/her goal of information processing. For instance, *sensing vs. intuition* dichotomy reflects how an individual aims to utilize the information he/she has gathered (Kroeger and Thuesen 2013). *Sensing* types prefer gathering information that has swift practical application (Kroeger and Thuesen 2013). Therefore, when gathering information from online consumer reviews, *numerical rating*, instead of *opinionated review*, is more relevant to the practical goal of sensing types because the former is more useful in comparing and communicating quality of products/services. On the other hand, *intuition* types often gather information in order to enjoy the concepts and ideas for their own sake and imagine the possibilities of how things could be (Kroeger and Thuesen 2013). Consequently, *intuition* types are expected to focus on *opinionated review* rather than *numerical rating* due to the paucity of ideas, concepts, and room for imagination in the latter. As a result, the direction of *sensing vs. intuition* dichotomy is expected to moderate the influence of *numerical rating* and *opinionated review* on users' trust in a website. We hence propose that,

Hypothesis 8: An individual's propensity towards intuition as opposed to sensing negatively moderates the positive relationship between user generated numerical rating provided on a website and his/her trust in this website.

Hypothesis 9: An individual's propensity towards intuition as opposed to sensing positively moderates the positive relationship between user generated opinionated review provided on a website and his/her trust in this website.

Finally, the *judging vs. perceiving* dichotomy indicates the goal an individual aims to achieve with gathered information (Kroeger and Thuesen 2013). Particularly, *judging* types prefer having matters settled and ensuring everything is planned and predictable (Kroeger and Thuesen 2013). Consequently, judging types are likely to have a preference for *numerical rating* over *opinionated review* because the former leaves little room for interpretations. On the contrary, *perceiving* types enjoy going with the flow and having open options (Kroeger and Thuesen 2013). Because the interpretation of *opinionated review* is much more flexible than that of *numerical rating*, *perceiving* types often focus on the former because these users are more likely to encounter surprising and unexpected opinions. Therefore the direction of *judging vs. perceiving* dichotomy is expected to moderate the influence of *numerical rating* and *opinionated review* on users' trust in a website. We thus posit that,

Hypothesis 10: An individual's propensity towards perceiving as opposed to judging negatively moderates the positive relationship between user generated numerical rating provided on a website and his/her trust in this website.

Hypothesis 11: An individual's propensity towards perceiving as opposed to judging positively moderates the positive relationship between user generated opinionated review provided on a website and his/her trust in this website.

Methodology

A field survey was conducted to test the hypotheses proposed in this study. Due to the difficulty for respondents to accurately recall their experience with online review information, an online review website that provides *numerical rating* and *opinionated review* (see Figure 1) was custom developed for the purpose of this study. To populate this website, we extracted, via web scrapping, approximately 268,000 real online consumer reviews written by over 91,000 diners on 1,079 restaurants in the San Francisco area. By familiarizing respondents with both *numerical rating* and *opinionated reviews*, we hope to alleviate the challenges they would face in recollection when answering survey questions.

Development of Survey Measures

Measurement items for both *numerical rating* and *opinionated review* were newly developed for this study in accordance with standard psychometric procedures (Moore and Benbasat 1991). Measures for trust were adapted from prior studies (Gefen 2002). Table 1 depicts the list of measurement items for this study.

| Construct | Definition | Reflective Measures [7-point Likert scale] | Mean (S.D.) | Item Loading |
|-------------------------|---|---|--------------------|---------------------|
| Numerical Rating (NR) | Extent to which a consumer believes that numerical ratings are provided for each product or service featured on the online review website | The online review website provides numerical ratings assigned by other consumers for each restaurant featured on the site. | 5.47 (1.58) | 0.88 |
| | | The online review website provides numerical scores assigned by other consumers for each restaurant featured on the site. | 4.95 (1.65) | 0.94 |
| | | The online review website provides numerical values assigned by other consumers for each restaurant featured on the site. | 4.97 (1.61) | 0.87 |
| Opinionated Review (OR) | Extent to which a consumer believes that opinionated reviews are provided for each product or service featured on the online review website | The online review website provides other consumers' comments for each restaurant featured on the site. | 5.79 (1.30) | 0.90 |
| | | The online review website provides other consumers' feedback for each restaurant featured on the site. | 5.72 (1.31) | 0.88 |
| | | The online review website provides other consumers' impressions for each restaurant featured on the site. | 5.83 (1.22) | 0.90 |
| | | The online review website provides other consumers' opinions for each restaurant featured on the site. | 5.74 (1.28) | 0.92 |

| | | | | |
|--|--|--|----------------|------|
| | | The online review website provides other consumers' views for each restaurant featured on the site. | 5.69 (1.31) | 0.85 |
| Trust [as adapted from Gefen, 2002] (TR) | Willingness to make oneself vulnerable to actions taken by the trusted party (i.e., online review website) based on the feeling of confidence or assurance | Even if not monitored, I would trust the online review website to do the job right. | 4.14 (1.77) | 0.84 |
| | | I trust the online review website. | 4.60 (1.56) | 0.96 |
| | | I believe that the online review website is trustworthy. | 4.67 (1.43) | 0.92 |
| | | I am quite certain what to expect from the online review website. | 5.00 (1.36) | 0.75 |

To measure the four dichotomies of personality preference, we adopted a shortened version of MBTI that consists of 70 questions (Myers-Briggs 1962), including 10 questions for extraversion vs. introversion (EI), 20 for sensing vs. intuition (SN), 20 for thinking vs. feeling (TF), and 20 for judging vs. perceiving (JP) (Harvey et al. 1994). For each question, respondents are forced to choose between two paired opposites, which reflect the respondents' propensity towards one of the two opposing personality types in a dichotomy. The direction for each dichotomy (i.e., a binary variable) is determined by the dominant propensity (i.e., the majority of answers) towards a certain type (Myers and McCaulley 1988). For example, if 7 out of 10 answers provided by a respondent illustrate a preference toward extraversion, his/her direction of the *extraversion vs. introversion* dichotomy is determined to be extraversion (see Appendix A for the MBTI instrument used in this study).

Field Survey Procedures

At the start of each survey session, respondents were asked to provide their demographic information. They were then directed to our online review website and instructed to complete a well-structured, goal-oriented restaurant selection task (i.e., selecting a restaurant for a friend) and an unstructured exploratory restaurant selection task (i.e., selecting a restaurant for yourself) (Browne et al. 2007; Nadkarni and Gupta 2007) (see Appendix B for the task scenarios). Prior research suggests that task types can alter individuals' information evaluation process (Browne et al. 2007). By incorporating both types of tasks, we offer respondents a more complete and realistic restaurant evaluation experience, and neutralize the potential confounding effect of task type. Moreover, two consecutive tasks can elongate respondents' exposure to online review information, thus reinforcing their impression of *numerical rating* and *opinionated review*. Respondents were asked to make their selection on the basis of the *numerical ratings* and *opinionated reviews* available for each restaurant. Upon the completion of both tasks, respondents were presented with an online survey questionnaire that measured their perceptions pertaining to the provision of *numerical rating* and *opinionated review*, their trust in the website, as well as their MBTI personality types. 188 undergraduate students from a large university in the United States participated in the field survey. 18 participants opted out the study, leaving 170 valid responses. Table 2 summarizes descriptive statistics of the sample.

| Table 2. Instrument and Measurement Properties [Sample N = 170] | | |
|--|------------------------|-------------------|
| Demographic | No. Respondents | Percentage |
| Gender | | |
| Male | 88 | 51.8% |
| Female | 82 | 48.2% |
| Age | | |
| Age 12 to 18 | 3 | 1.8% |

| | | |
|-----------------------------|-----|-------|
| Age 19 to 29 | 153 | 90.0% |
| Age 30 to 49 | 13 | 7.6% |
| Age 60+ | 1 | 0.6% |
| Education | | |
| Less than college education | 20 | 11.8% |
| College education or higher | 149 | 87.6% |
| Unwilling to disclose | 1 | 0.6% |
| Income | | |
| \$0 to \$30,000 | 140 | 82.4% |
| \$30,000+ to \$50,000 | 9 | 5.3% |
| \$50,000+ to \$75,000 | 4 | 2.4% |
| \$75,000+ | 2 | 1.2% |
| Unwilling to disclose | 15 | 8.8% |

Model Testing

We employed Partial Least Square (SmartPLS 2.0 M3) to validate both the measurement model and the structural model (Chin 1998). Because we wish to simultaneously analyze the psychometric properties of the measures (i.e., the measurement model) as well as both the direction and strength of each hypothesized relationship (i.e., the structural model), Partial least squares (PLS) analysis is preferred over other analytical methods (Wixom and Watson 2001).

Measurement Model

The measurement model was assessed by evaluating individual item reliability, internal consistency, as well as the convergent and discriminant validity of all the measurement items included in our survey instrument. Individual item reliability was examined by the loadings of measures with their corresponding construct. All of the loadings exceed 0.7, indicating good item reliability. Internal consistency was assessed by examining Cronbach's alpha, composite reliability and the Average Variance Extracted (AVE) (Fornell and Larcker 1981; Nunnally and Bernstein 1994). Results showed that all aforementioned indicators exceed suggested thresholds (see Table 3), indicating good internal consistency. Further, the square root of AVE of every construct in the measurement model was found to be greater than the correlations of the construct with other constructs (see Table3). Also, according to the loading and cross-loading matrix, no item loads higher on a construct than on the one it intends to measure (see Table 4). The measures thus provide strong evidence of convergent validity and discriminant validity.

| Construct | Cronbach's α [> 0.70] | CR [> 0.70] | AVE [> 0.50] | NR | OR | TR | EI | SN | TF | JP |
|-------------------------------|--|--|---|-------------|-------------|-------------|-----------|-----------|-----------|-----------|
| Numerical Rating (NR) | 0.88 | 0.92 | 0.80 | 0.89 | | | | | | |
| Opinionated Review (OR) | 0.93 | 0.95 | 0.79 | 0.43 | 0.89 | | | | | |
| Trust (TR) | 0.89 | 0.93 | 0.76 | 0.21 | 0.25 | 0.87 | | | | |
| Extraversion vs. Introversion | N/A | N/A | N/A | -0.11 | -0.05 | -0.26 | N/A | | | |

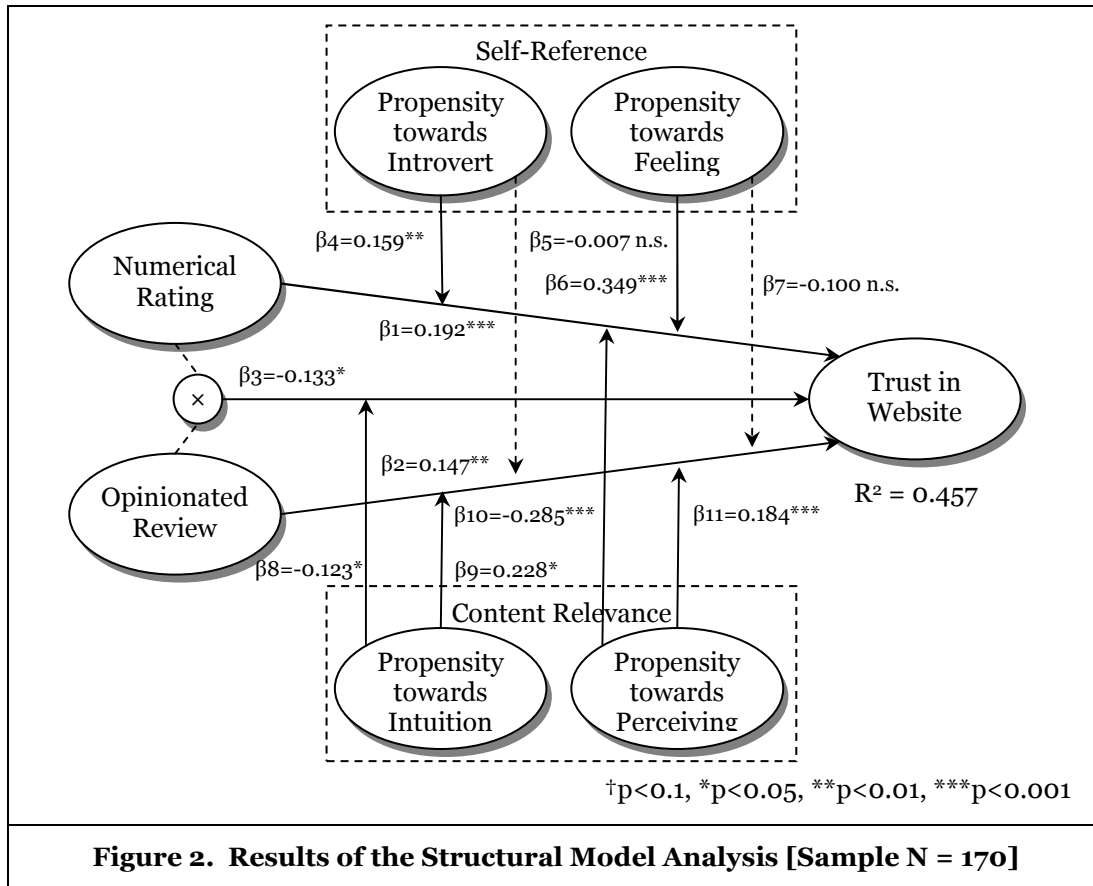
| | | | | | | | | | | |
|-----------------------------|-----|-----|-----|-------|-------|-------|-------|------|------|-----|
| (EI) | | | | | | | | | | |
| Sensing vs. Intuition (SN) | N/A | N/A | N/A | -0.17 | 0.16 | -0.05 | 0.08 | N/A | | |
| Thinking vs. Feeling (TF) | N/A | N/A | N/A | 0.05 | -0.02 | -0.22 | -0.04 | 0.28 | N/A | |
| Judging vs. Perceiving (JP) | N/A | N/A | N/A | 0.02 | 0.01 | 0.17 | -0.13 | 0.29 | 0.27 | N/A |

Structural Model

Figure 2 illustrates the result of analysis of the structural model, including path coefficients and their significance. As Figure 2 depicted, both *numerical rating* ($\beta = 0.192, p < 0.001$) and *opinionated review* ($\beta = 0.147, p < 0.01$) exert significant positive influences on trust in online review website, which corroborates Hypotheses 1 and 2. In order to test the interaction effect between *numerical rating* and *opinionated review*, we created a mean-centered interaction term by multiplying the former by the latter. This interaction term ($\beta = 0.133, p < 0.05$) negatively affects trust, thus supporting Hypothesis 3. Likewise, both *numerical rating* and *opinionated review* were multiplied by all four psychological types and mean-centered respectively in order to validate how *extraversion vs. introversion* ($\beta = 0.159, p <$

Table 4. Loading and Cross-Loading Matrix [Sample N = 170]

| Items | NR | OR | TR | EI | SN | TF | JP |
|-------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| NR1 | 0.88 | 0.46 | 0.22 | -0.08 | -0.23 | -0.05 | -0.09 |
| NR2 | 0.93 | 0.33 | 0.20 | -0.12 | -0.07 | 0.11 | 0.10 |
| NR3 | 0.87 | 0.33 | 0.11 | -0.11 | -0.13 | 0.09 | 0.09 |
| OR1 | 0.39 | 0.90 | 0.19 | -0.11 | 0.01 | 0.02 | -0.09 |
| OR2 | 0.35 | 0.88 | 0.19 | -0.16 | 0.04 | 0.02 | 0.00 |
| OR3 | 0.38 | 0.90 | 0.24 | 0.03 | 0.15 | 0.03 | 0.07 |
| OR4 | 0.41 | 0.92 | 0.25 | -0.07 | 0.19 | -0.02 | 0.10 |
| OR5 | 0.36 | 0.85 | 0.22 | 0.05 | -0.09 | 0.014 | -0.05 |
| TR1 | 0.23 | 0.08 | 0.84 | -0.27 | -0.09 | -0.16 | 0.19 |
| TR2 | 0.14 | 0.22 | 0.96 | -0.23 | -0.04 | -0.20 | 0.18 |
| TR3 | 0.13 | 0.18 | 0.92 | -0.18 | -0.02 | -0.23 | 0.14 |
| TR4 | 0.27 | 0.43 | 0.75 | -0.20 | -0.03 | -0.20 | 0.07 |
| EI | -0.12 | -0.05 | -0.26 | 1.00 | 0.08 | 0.08 | -0.04 |
| SN | -0.17 | 0.12 | -0.05 | 0.08 | 1.00 | 0.28 | 0.29 |
| TF | 0.05 | -0.02 | -0.22 | -0.04 | 0.28 | 1.00 | 0.27 |
| JP | 0.02 | 0.01 | 0.17 | -0.13 | 0.29 | 0.27 | 1.00 |



0.01; $\beta = -0.007$, n.s.), *thinking vs. feeling* ($\beta = 0.349$, $p < 0.001$; $\beta = 0.100$, n.s.), *sensing vs. intuition* ($\beta = -0.123$, $p < 0.05$; $\beta = 0.228$, $p < 0.05$), and *judging vs. perceiving* ($\beta = -0.285$, $p < 0.001$; $\beta = 0.184$, $p < 0.001$) moderate the impact of *numerical rating* and *opinionated review*. While Hypotheses 4, 6, 8-11 are supported by data, Hypotheses 5 and 7 are not.

As the data in our study were collected via a single survey questionnaire, common method bias could be a potential threat to the internal validity of the study. To reduce the concern for common method bias, we conducted the one-factor extraction test suggested by Harman (1976) by performing exploratory factor analysis (EFA) of the 16 variables. Five salient components with eigenvalues greater than 1.00 surfaced with no single factor accounting for more than 50% of the total variance explained (Schriesheim 1979), suggesting that our data analysis is unlikely to be plagued by common method bias.

Discussion

In this paper, we propose a theory-guided research model to investigate the effectiveness of conveying trustworthiness of an online review website through highlighting *numerical rating* or *opinionated review* varies in accordance with users' preferences for either form of review. By integrating the *preference structure theory* and MBTI, we are able to specify how a user would deem a specific form of online review information as relevant to his/her self-schema and information-processing goal. A field survey was conducted to empirically validate this research model. Results demonstrate the importance of strategically personalizing the form of review based on users' preference. Such a strategy could prove stronger than one that simultaneously emphasizes both *numerical rating* and *opinionated review*, as the presence of potentially inconsistent forms of review could undermine the trustworthiness of an online review website. Consistent with findings from prior studies (Tam and Ho 2006), the non-significant moderating effects of preference for *self-reference* on the positive relationship between *opinionated review* and trust suggest that online users are less sensitive to the misalignment between *opinionated review* and their information

processing goals. Specifically, due to the static nature of *opinionated review* as well as the absence of continuous social interaction, *introversion* types can still focus on their own thoughts and ideas (Harrington and Loffredo 2010; Kroeger and Thuesen 2013) while browsing through *opinionated review*. In addition, since the *opinionated review* often highlights dominant opinions in review section, *feeling* types should also be able to seek harmony and consensus in *opinionated review* (Kroeger and Thuesen 2013). Findings from this study bear implications for both researchers and practitioners.

Implications for Research and Practice

This study contributes to extant online consumer review literature in several ways. First, this study delineates *numerical rating* and *opinionated review* as two distinct forms of online consumer review. We posit that emphasizing both forms of review at the same time might result in cognitive dissonance. Consistent with cognitive dissonance theory (Festinger 1962, 2010), our findings suggest that users who perceive dissonance between *numerical rating* and *opinionated review* will likely try to restore their internal consistency by deeming the online review website as less trustworthy. Second, distinguishing *numerical rating* from *opinionated review* allows us to draw from preference structure and four MBTI dichotomies to articulate individuals' preference for either form of review. For instance, an individual who demonstrates a dominant propensity towards extraversion (introversion) may perceive a(n) misalignment (alignment) between numerical rating and his/her self-schema. Likewise, an individual who prefers thinking (feeling) tends to regard numerical rating as incompatible (compatible) with his/her self-schema. On the other hand, an individual who has a preference for sensing (intuition) often deems *numerical rating* (*opinionated review*) as more relevant to his/her information-processing goal. Similarly, *numerical rating* (*opinionated review*) can be regarded as more goal relevant for individuals whose personality type is judging (perceiving). Our theory-driven taxonomy of MBTI bipolar dimensions could be beneficial to future studies that endeavor to explore the influence of personality preference. Third, findings of this study point to the important role played by online personalization in establishing trust between online service providers (i.e., online review websites) and their users (Beldad et al. 2010; Briggs et al. 2004; Koufaris and Hampton-Sosa 2004). Not only does this study reiterate the importance for online review websites to cater to users' *self-reference* and *content relevance*, but it also suggests that users can be more sensitive to personalization in relation to the latter.

Findings of our study also provide practical insights and guidelines for online review website practitioners. First, the results of this study help practitioners understand the potential downside of featuring *numerical rating* and *opinionated review* at the same time. Second, to avoid possible dissonance between *numerical rating* and *opinionated review* as well as to enhance users' trust in the website, we recommend that practitioners personalize the form of review each user receives in accordance to his/her preference for *self-reference* and *content relevance*. Currently, there is a prevalence of social login (meaning users use their social media account to login other websites), which allows websites to probe their users social activities and gain insights into their personality (Correa et al. 2010; Hughes et al. 2012; Seidman 2013). To facilitate the personalization of review summary, we suggest that online review websites utilize users' social media accounts to learn more about users' personality and preference.

Limitations and Future Research Directions

The present study has a number of limitations. First, to keep our research model parsimonious, we chose to focus on investigating trust in online review website. Nonetheless, we encourage futures studies to explore how individual preference structure may alter the influence of online consumer reviews on users' perceptions regarding the product/service being reviewed or the reviews per se. Second, the sample of this study consists largely of college students. Although student sample is suitable for our research context of online consumer review (McKnight et al. 2002), additional studies can be conducted with a more diverse sample to bolster the external validity of our findings. Third, since we adopt field survey as our research method, spurious causal effect inferences may exist due to the cross-sectional nature of this study. Fourth, although we attempted to mitigate the potential impact of task type on our hypotheses by incorporating both a well-structure goal oriented task and an unstructured exploratory task in our study procedure, limited by the nature of field survey, we were not able to further specify the impact of task type.

Appendix A MBTI Instrument

| MBTI Instrument | | | |
|--|---|---|---|
| Questions for Extraversion (a) vs. Introversion (b) | Questions for Sensing (a) vs. Intuition (b) | Questions for Thinking (a) vs. Feeling (b) | Questions for Judging (a) vs. Perceiving (b) |
| 1. At a party do you: a. Interact with many, including strangers b. Interact with a few, known to you | 2. Are you more: a. Realistic than speculative b. Speculative than realistic | 4. Are you more impressed by: a. Principles b. Emotions | 6. Do you prefer to work: a. To deadlines b. Just "whenever" |
| 8. At parties do you: a. Stay late, with increasing energy b. Leave early with decreased energy | 3. Is it worse to: a. Have your "head in the clouds" b. Be "in a rut" | 5. Are more drawn toward the: a. Convincing b. Touching | 7. Do you tend to choose: a. Rather carefully b. Somewhat impulsively |
| 15. In your social groups do you: a. Keep abreast of other's happenings b. Get behind on the news | 9. Are you more attracted to: a. Sensible people b. Imaginative people | 11. In judging others are you more swayed by: a. Laws than circumstances b. Circumstances than laws | 13. Are you more: a. Punctual b. Leisurely |
| 22. In phoning do you: a. Rarely question that it will all be said b. Rehearse what you'll say | 10. Are you more interested in: a. What is actual b. What is possible | 12. In approaching others is your inclination to be somewhat: a. Objective b. Personal | 14. Does it bother you more having things: a. Incomplete b. Completed |
| 29. In company do you: a. initiate conversation b. wait to be approached | 16. In doing ordinary things are you more likely to: a. Do it the usual way b. Do it your own way | 18. Which appeals to you more: a. Consistency of thought b. Harmonious human relationships | 20. Do you want things: a. Settled and decided b. Unsettled and undecided |
| 36. Does new and non-routine interaction with others: a. stimulate and energize you b. tax your reserves | 17. Writers should: a. "Say what they mean and mean what they say" b. Express things more by use of analogy | 19. Are you more comfortable in making: a. Logical judgments b. Value judgments | 21. Would you say you are more: a. Serious and determined b. Easy-going |
| 43. Do you prefer: a. many friends with brief contact b. a few friends with more lengthy contact | 23. Facts: a. "Speak for themselves" b. Illustrate principles | 25. Are you more often: a. a cool-headed person b. a warm-hearted person | 27. Should one usually let events occur: a. by careful selection and choice b. randomly and by chance |
| 50. Do you: a. speak easily and at | 24. Are visionaries: | 26. Is it worse to be: | 28. Do you feel better about: |

| | | | |
|--|--|--|---|
| length with strangers b. find little to say to strangers | a. somewhat annoying b. rather fascinating | a. unjust b. merciless | a. having purchased b. having the option to buy |
| 57. When the phone rings do you: a. hasten to get to it first b. hope someone else will answer | 30. Common sense is: a. rarely questionable b. frequently questionable | 32. In making decisions do you feel more comfortable with: a. standards b. feelings | 34. Which is more admirable: a. the ability to organize and be methodical b. the ability to adapt and make do |
| 64. Are you more inclined to be: a. easy to approach b. somewhat reserved | 31. Children often do not: a. make themselves useful enough b. exercise their fantasy enough | 33. Are you more: a. firm than gentle b. gentle than firm | 35. Do you put more value on: a. infinite b. open-minded |
| | 37. Are you more frequently: a. a practical sort of person b. a fanciful sort of person | 39. Which is more satisfying: a. to discuss an issue thoroughly b. to arrive at agreement on an issue | 41. Are you more comfortable with work that is: a. contracted b. done on a casual basis |
| | 38. Are you more likely to: a. see how others are useful b. see how others see | 40. Which rules you more: a. your head b. your heart | 42. Do you tend to look for: a. the orderly b. whatever turns up |
| | 44. Do you go more by: a. facts b. principles | 46. Which is more of a compliment: a. "There is a very logical person." b. "There is a very sentimental person." | 48. Do you more often prefer the a. final and unalterable statement b. tentative and preliminary statement |
| | 45. Are you more interested in: a. production and distribution b. design and research | 47. Do you value in yourself more that you are: a. unwavering b. devoted | 49. Are you more comfortable: a. after a decision b. before a decision |
| | 51. Are you more likely to trust your: a. experience b. hunch | 53. Which person is more to be complimented – one of: a. clear reason b. strong feeling | 55. Is it preferable mostly to: a. make sure things are arranged b. just let things happen |
| | 52. Do you feel: a. more practical than ingenious b. more ingenious than practical | 54. Are you inclined more to be: a. fair-minded b. sympathetic | 56. In relationships should most things be: a. re-negotiable b. random and circumstantial |
| | 58. Do you prize more | 60. Which seems the | 62. Which situation |

| | | | |
|--|---|---|--|
| | in yourself: a. a strong sense of reality b. a vivid imagination | greater error: a. to be too passionate b. to be too objective | appeals to you more: a. the structured and scheduled b. the unstructured and unscheduled |
| | 59. Are you drawn more to: a. fundamentals b. overtones | 61. Do you see yourself as basically: a. hard-headed b. soft-hearted | 63. Are you a person that is more: a. routinized than whimsical b. whimsical than routinized |
| | 65. In writings do you prefer: a. the more literal b. the more figurative | 67. Which do you wish more for yourself: a. clarity of reason b. strength of compassion | 69. Do you prefer the: a. planned event b. unplanned event |
| | 66. Is it harder for you to: a. identify with others b. utilize others | 68. Which is the greater fault: a. being indiscriminate b. being critical | 70. Do you tend to be more: a. deliberate than spontaneous b. spontaneous than deliberate |

Appendix B Restaurant Selection Tasks

Task 1: Find a restaurant for your friend's birthday dinner

Scenario: You are planning to visit your best friend, Peter, who lives in the Russian Hill area of San Francisco and likes New American food, next Saturday. Peter will be having his birthday on the same day. You plan to surprise Peter during your visit by bringing him to a nice New American restaurant to celebrate his birthday.

Because you are unfamiliar with the area around Russian Hill, you decide to turn to TasteSF, a newly set up online review website for restaurants in San Francisco, to choose an American (NEW) restaurant in the Russian Hill area.

Task 2: Find a restaurant for yourself

You are taking a trip to San Francisco next Saturday. You would like to enjoy a meal alone in a nice restaurant. Because you are unfamiliar with San Francisco, you decide to turn to TasteSF, a newly set up online review website for restaurants in San Francisco, to choose a restaurant you prefer.

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