Reading to make a decision or to reduce cognitive dissonance? The effect of selecting and reading online reviews from a post-decision context

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Abstract
This research challenges the presumption that reading online reviews solely affect reader attitudes toward a prospective decision. Instead, readers may strategically select and read reviews after a decision. This research advances and tests hypotheses proposing that: (1) post-decision readers select decision-supportive reviews earlier and more frequently; and (2) the reviews they read affect the subsequent cognitive dissonance they experienced. Two studies employed an original post-decision experiment and demonstrated that readers expressed biased review selection. Interestingly, the reviews they read affected and increased their cognitive dissonance. The findings contributed to understanding the complex dynamic of online reviews in a post-decision context.

Introduction
Online reviews (e.g., customer reviews on Amazon.com) continue to be an important and popular source of information (Dellarocas, 2003; Dellarocas, Zhang, & Awad, 2007). These reviews originate from other users; as a result, products retailers undoubtedly utilize their influences to facilitate purchase behavior (Purnawirawan, Eisend, Pelsmacker, & Dens, 2015). Readers often perceive online reviews as more credible and more trustworthy than traditional advertising (e.g., Huang, Chou, & Lan, 2007). Based on this advantage, prior research related to online reviews has largely attended to the effect of reading reviews on reader attitudes (e.g., Doh & Hwang, 2009; Kim & Hollingshead, 2015; Lee, Rodgers, & Kim, 2009). These attitudes serve as conceptual antecedents toward some decisional and behavioral outcomes of interest (e.g., purchasing a laptop computer; choosing to use e-cigarettes).

The decision- or outcome-oriented perspective is especially evident in recent review articles and summaries (e.g., Kim & Hollingshead, 2015; Walther & Jang, 2012). These authors outlined various sources of persuasive influence on participatory, or Web 2.0, websites and their associated effects on reader attitudes. Under this participatory view, the extent to which the review valence, or the extent to which reviews are positive or negative, serve as a generalized source of influence that directionally and aggregately correspond to influence reader attitudes (e.g., Purnawirawan et al., 2015; Walther, Liang, Ganster, Wohn, & Emington, 2012).

Importantly, even after making a decision (e.g., product purchase), readers can still select and read online reviews. This post-decision selection and reading behavior theoretically serves a different motivation than the motivation for making an accurate decision (Festinger, 1957; Fischer & Greitemeyer, 2010). More important, this motivation activates specific selection biases and associated effects. The current research advances and tests such a post-decision dynamic to examine and explore the alternative effect of online reviews on readers.

The current research focuses this post-decision dynamic at a theoretical and practical level by reporting on a series of systematic research. This research starts by providing empirical evidence establishing that readers do frequently utilize and read reviews after a decision. Next, this research examines how post-decision readers select reviews and the associated effect in a controlled laboratory design. Finally, this research provides a replication of the findings in an online environment. The following sections provide rationale and justify the relevance for investigating online reviews from a post-decision context.

1. Online reviews: The importance of a post-decision perspective

On participatory websites, readers often first confront the task
of selecting which reviews to read from the plethora of reviews available online. Popular retail websites, such as Amazon.com, have amassed a large number of product reviews. Otterbacher (2009) reported an average of 340 reviews posted for products randomly sampled on Amazon.com. Ghose and Ipeirotis (2007) also reported a high number of reviews per product (M = 138), 1339 reviews being at the high end for a single product. It is not surprising that a Pew Internet Survey found that 30% of internet users reported feeling overwhelmed by the amount of information they found while shopping or researching online (Horrigan, 2008). Given the abundance of available reviews, readers’ motivation likely guide how their selection and subsequent reading behaviors.

Reader motivation differs based on whether a decision has taken place (i.e., pre-versus post-decision). Before a decision (e.g., product purchase), readers may seek information to make an accurate decision (Fischer & Greitemeyer, 2010). After a decision, readers may seek information to justify the decision they made (Cummings & Venkatesan, 1976; Fischer & Greitemeyer, 2010). This motivational difference leads to a discrepancy in how readers both select and regard the information they receive (Fischer & Greitemeyer, 2010; Hart et al., 2009).

Examining reviews from this post-decisional perspective offers vital contributions to understanding how participatory websites affect readers. Participatory websites (Walther & Jang, 2012) are distinct communication environments where multiple sources of influences and cues (e.g., star ratings, helpfulness ratings, number of comments, likes) exist simultaneously. These cues may facilitate the selection process by serving as sorting cues that best address the readers’ motivation. For example, readers may select reviews they perceive as higher in quality prior to a decision; after making the decision, they may select reviews that support their decision to reduce dissonance. Specifically, a decision activates a motivational mechanism to support the original decision. This activation suggests that there are characteristics of selected reviews that systematically attract attention and selection. This post-decision motivation also affects outcomes other than attitude (e.g., increasing or reducing cognitive dissonance). In a post-decision context, decision accuracy is not the primary motivation for information-seeking. Addressing this argument may yield corresponding data that provide boundary conditions for the existing research on the effect of online reviews. In addition, it empirically demonstrates how reviews serve a differential purpose after a decision.

2. Participatory websites and aggregated user-representations

The motivational effect may also alter how readers regard different sources of persuasive influence on participatory websites. There are multiple sources, and each source specifically references the type of cues and signals left by users (Walther & Jang, 2012). One such cue, star ratings, conveys information regarding the contents of a particular review and allows readers to select reviews without fully reading the textual content. Prior to making a decision, the cue conveys specific valence characteristic regarding the review. For example, star ratings conveys the extent to which a review is positive or negative toward a product. However, the product decision alters the manner to which this cue may be interpreted as decision-supportive (i.e., congenial) or decision-unsupportive (i.e., uncongenial) (Hart et al., 2009). This suggests that one cue provides different signals on the basis of whether a decision has been made (Fischer & Greitemeyer, 2010; Hart et al., 2009). The current research focuses on this review valence (i.e., star ratings), one of the most prominent cues present on platforms such as Amazon.com.

This type of cue categorically fits Walther and Jang’s (2012) description of aggregated user-representations (AUR). Their framework describes different sources of persuasive influence and how they juxtapose in influencing on reader. AUR, in the case of star ratings, is deliberate in that users intentionally leave the rating to help readers in making the decision. However, the post-decision perspective takes a different theoretical contention that AURs can support alternative functions for dissonance reduction as opposed to directly influencing reader attitude toward a decision. This contrast is elaborated in that post-decision motivation alters the potential meaning conveyed by AUR, explained below.

Pre-decisionally, the information conveyed by star ratings is clear. Positive reviews (e.g., 5 out of 5 stars or 4 out of 5 stars) recommend the product to other readers. This type of review often contains corresponding written information in the text that is favorable toward the product. Alternatively, negative reviews (e.g., 1 out of 5 stars or 2 out of 5 stars) dissuade other consumers from a decision by providing an overall unfavorable rating and corresponding written information that discourages the purchase.

As opposed to valence, post-decisional star ratings can convey the congeniality of a review. Congeniality depends on the results of a prior decision (Hart et al., 2009). Congenial reviews, regardless of valence, confirm a decision. Uncongenial reviews disconfirm the decision. For example, if a reader purchased an Apple computer, congenial reviews include positive reviews of the Apple computer. In addition, congenial reviews include negative reviews of alternative products that the reader did not purchase (e.g., Sony computers). Uncongenial reviews include negative reviews for the Apple computer and positive reviews for alternative products (e.g., Sony computers). The need to alleviate the dissonance may lead readers to find congenial reviews and avoid uncongenial reviews (Chatterjee, 2001; Cummings & Venkatesan, 1976; Soutar & Sweeney, 2003). The current research applies and extends cognitive dissonance theory (Festinger, 1957) to examine the post-decision dynamic on participatory websites.

3. Cognitive dissonance theory

Cognitive dissonance theory (Festinger, 1957) specifies the presence of cognitive elements. One or more elements that are inconsistent with one another lead to cognitive dissonance. Festinger (1957) notes that “[a] decision between two alternatives, each with positive and negative aspects] is probably the most usual type of decision situation … dissonance will result when action is taken” (p. 36). Specifically, the importance of the decision, the attractiveness of the unchosen alternative, and the degree of cognitive overlap affect the magnitude of dissonance.

“The importance of the decision will affect the magnitude of dissonance that exists after the decision has been made” (Festinger, 1957, p. 37). For example, deciding between products a person may actually purchase or own is more important than a hypothetical decision. An important decision invokes more cognitive elements. For instance, learning about a product that one may potentially purchase corresponds with important cognitive elements regarding future consequences of receiving the product (e.g., reliability, quality) and the prospect of using it.

The attractiveness of the unchosen alternative also affects cognitive dissonance. Selecting one attractive alternative (e.g., a product) means rejecting the other attractive alternative (e.g., another product) with its own associated desirable features. Put plainly, choosing between two similarly attractive alternatives results in “giving up” something, and thus produces cognitive dissonance. For example, if a reader views a Samsung and a Sony phone as nearly equal in how much he/she would like to own the phone, this person will experience a high degree of dissonance from the decision. However, when two alternatives are not similar in
attractiveness and the chosen alternative is clearly superior, the decision produces little dissonance.

According to Festinger (1957), if two alternatives share similar attributes (different from attractiveness discussed previously), the cognitive elements related to these two alternatives overlap. For products, attributes involve product features, specifications, capabilities, among others. When a high degree of overlap occurs, little cognitive dissonance is aroused. Festinger demonstrates this context with an example involving a choice between two identical products where the only difference is that one costs $5.00 while the other one costs $4.99. The two products share a high degree of overall features in terms of cost, or cognitive overlap. The choice of either product would result in little or no cognitive dissonance, despite the similarity in the attractiveness of price. Conversely, cognitive dissonance occurs when individuals choose between two alternatives with features that qualitatively differ from each other. In this situation, decrease in overlap invokes different cognitive elements associated with each of the qualities.

The first research question addresses the effect of the three factors affecting the magnitude of cognitive dissonance in the context of online reviews on participatory websites:

RQ1: After making a decision, what is the relationship between the importance of the decision, the attractiveness of the unchosen option, and the degree of cognitive overlap on cognitive dissonance in a participatory website environment?

4. Effect of decision on review selection and cognitive dissonance

Since its inception in 1957 and a later addendum in 1964, cognitive dissonance theory had undergone tremendous test and development over the span of 50 years (For a review, see Cooper, 2007). Recent meta-analytic reviews (Hart et al., 2009) and revised models of the theory (Fischer & Greitemeyer, 2010) concluded with a clear support the effect of dissonance on communication behaviors. These behaviors manifest in terms of how individuals select messages (e.g., online reviews) after making a decision. The current study adopts the original and robust tenets of cognitive dissonance theory (Festinger, 1957) to experimentally test the dissonance effects on participatory websites. The goal is to examine how individuals may utilize this more recent and newer communication technology, given its broad availability, ease for message selection, and presence of cues, to serve the alternative goal of dissonance reduction explained by the classic theory.

In the context of consumer decisions, Oliver (1997) explained that the dissonance is uniquely maximized during the “gamma stage” when consumers made a decision but have not yet received the product or service to have direct experiences. This is an important stage as it connects the psychological state of the consumers to the communication messages that they may select. The dissonance affects message exposure in terms of online reviews, which in turn affects dissonance. The characteristics of these reviews may even influence post-purchase attitudes, which is an important antecedent to product regret and possible product return intentions (Das & Kerr, 2010).

As a psychological discomfort, cognitive dissonance motivates individuals towards its reduction. To alleviate cognitive dissonance, individuals have both cognitive and behavioral strategies. Cognitive strategies involve psychological changes associated with the cognitive elements (e.g., changing existing cognitive elements, changing the importance of elements, adding elements, and/or removing elements). The current research focuses on the behavioral strategies that affect how dissonant individuals select and read online reviews using cues available on participatory websites. One behavioral strategy is to avoid information that produces additional cognitive dissonance. Specifically, individuals avoid uncongenial information that challenges or opposes the decision. When readers prefer congenial information more than uncongenial information, a congeniality bias occurs (Hart et al., 2009). Hart et al.’s (2009) meta-analysis demonstrated an ample and robust effect of the congeniality bias effect (average $d = 0.36$) over the span of 91 studies across five decades of research.

To facilitate the selection process, the current study employed star ratings (i.e., number of stars), a cue that provides information of whether a review was congenial or uncongenial to a prior decision. Indicators of congenial exposure involves the number of reviews read and reading time. Specifically, more exposure of reading time supports attitude consistency (Knobloch-Westerwick & Meng, 2009):

H1a. Cognitive dissonance leads individuals to read more number of congenial reviews than uncongenial reviews.

H1b. Cognitive dissonance leads individuals to spend more time reading congenial reviews than uncongenial reviews.

In addition, cognitive dissonance also guides the order in which readers examine reviews. Although readers can read a series of reviews, congenial reviews that reduce cognitive dissonance should systematically attract more attention than uncongenial reviews. The selection behavior manifests in terms of the order to which readers select reviews (congenial or uncongenial). Specifically, readers strategically select information, or congenial reviews, earlier than uncongenial reviews (e.g., Winter & Kramer, 2012).

H2. After making a decision, individuals generally select congenial reviews to read earlier than uncongenial reviews.

In turn, exposure to online review, either congenial or uncongenial, affects cognitive dissonance. Specifically, reading congenial information bolsters cognitive elements that support the original decision. The resulting cognitive dissonance should diminish. Applying this concept:

H3a. Reading more number of congenial reviews than uncongenial reviews affects subsequent cognitive dissonance.

H3b. Spending more time reading congenial reviews than uncongenial reviews affects subsequent cognitive dissonance.

5. Initial evidence demonstrating post-decision dissonance

An initial survey collected data to ascertain if individuals read online reviews after a product decision. Two questions were included as a part of a larger survey study related to consumer behavior ($n = 425$). The first question prompted participants, “How often or rarely do you read online customer reviews for a product after you purchased it?” Approximately 40% of participants reported between sometimes to very often. The second question asked participants to describe the type of information they found after they purchased a product, ranging from negative to positive. An overwhelming majority (86%) of the participants reported the information they found as somewhat positive to very positive. Results from this initial survey offered empirical justification to demonstrate that individuals do select and read reviews after a purchase decision, and the information appear to bias towards supporting the product decision.

6. Study 1 (lab) – the effect of decision on review selection and cognitive dissonance stimulus pretesting

A pilot study pretested the stimuli for the main studies (Study 1 and Study 2). The main studies focused on examining the effects of
cognitive dissonance on review selection, and how reviews affected cognitive dissonance. The experiential design involved participants who ranked products within a single product category (e.g., coffee makers), selected between two ranked products (e.g., the second and third product on a ranked list of 10 products), and read additional online reviews about the product that they selected. The pilot study examined different product categories.

6.1. Pretesting procedures

An offset group of 94 participants viewed three pre-selected product comparison matrices. Each matrix consisted of information about 10 products from a single product category (i.e., coffee makers, 10 blenders, or 10 vacuum cleaners). Participants viewed one comparison matrix at a time. For each matrix, participants received pictures of 10 products within the product category. Participants also received descriptions regarding relevant product attributes for that category. For instance, relevant attributes for blenders included motor power, number of speeds, jar capacity, jar material, and dimensions. Participants ranked the products within the category from best to worst quality, rated each product’s quality from good to bad on a single 15-point semantic differential item, and reported the overall difference from the best to the worst quality ratings among products within the category using an original scale with four 7-point semantic differential items: difficult/easy, demanding/underdemanding, long time/short time, and challenging/unchallenging. Participants also reported their overall involvement with each product category (Zaichkowsky, 1994; α = 0.91).

6.2. Pretesting results

Empirical determination for the product category reflected three criteria: low or moderate product category involvement, similar quality ratings among products within the category, and higher difficulty during the ranking task. Coffee makers were selected given its low product category involvement (M = 2.69), low variance for product quality ratings (mean variance = 11.59) and product ranking difficulty (M = 3.99).

6.3. Study 1 design

The first study examined cognitive dissonance and selection of online reviews in a controlled setting. Participants (N = 157) signed up using a department subject pool and received course credit for participation. The average age was 19.98 years (SD = 1.94) with more female participants (53%).

6.4. Experimental inductions

Per cognitive dissonance theory, greater decisional importance, greater similarity in the attractiveness of alternatives, and lower cognitive overlap should jointly produce greater post-decision dissonance. Participants were randomly assigned one of four conditions in a 2 x 2 (decision importance: important/unimportant) x 2 (attractiveness of choices: attractive/unattractive) experimental design. Cognitive overlap was measured based on the variation among the selected product attributes. To induce dissonance, participants initially ranked products and chose between two coffee makers ranked on their list.

6.4.1. Importance of the decision

Participants assigned to the important condition were informed that they may receive a coffee maker selected between the two coffee makers they ranked during the experimental task. This aforementioned procedure aimed to instill the decision with personal importance. Receiving a coffee maker should heighten the personal importance of the decision relative to the outcome. Past cognitive dissonance studies also employed the receipt of products to inducing importance and heighten dissonance (e.g., Lee & Schwarz, 2010; Loscuito & Perloff, 1967). Participants in the unimportant condition were only asked to make a choice between two products and select the one they liked better.

6.4.2. Attractiveness of choices

To determine the attractiveness of the coffee makers, participants initially completed a product-ranking task. Participants ranked the list of 10 coffee makers according to perceived quality. Participants chose between two coffee makers from the list. Unbeknownst to the participants, the two coffee makers from the list followed participants’ responses during the ranking task. The experimenter asked the participants assigned to the attractive condition to select between the second and the third ranked products from the participants’ own list. Participants assigned to the unattractive condition chose between the second and the seventh ranked coffee makers. Participants should perceive the two higher ranked products (second or third) as relatively similar in attractiveness, increasing cognitive dissonance. Alternatively, the second and the seventh ranked products should clearly differ in attractiveness.

6.4.3. Cognitive overlap

To minimize an overlap of multiple product attributes, the comparison matrix for coffee maker described several product attributes (e.g., dimensions, features, capabilities). This product matrix allowed all coffee makers to vary in some attributes, ensuring a minimal level of attribute discrepancy. However, due to the product ranking procedure, different product ranking combinations were possible, thus this factor was not induced experimentally. The attribute discrepancy score for each participant was coded for analysis. For instance, two coffee makers that differed in cup size and filter type were coded as a discrepancy score of two.

6.5. Study 1 procedures

Study 1 occurred in a laboratory setting. When participants arrived, a trained experimenter greeted and informed the participants that the study involved completing some measures, evaluating products, and viewing some reviews associated with the products. In the lab, the participants completed the study using the via a laptop computer.

The experimenter instructed the participants to rank-order 10 coffee makers. Each coffee maker contained a designated product code (e.g., Product Q), along with several attributes including brand, programmable settings, cup capacity, thermal cup, filter type, K-Cup, built-in grinder, and dimension. Participants ranked the coffee makers from the best to the worst quality. Then, participants selected between two coffee makers according to the assigned attractiveness condition (attractive/unattractive). Experimenters told participants that they could not change their decision. After participants selected a coffee maker, they completed the first cognitive dissonance measure assessing their post-decision dissonance (T1). Following the measure, the experimenter displayed a review title page (Fig. 1) with titles of online reviews. The experiment also told participants that the reviews aimed to assist participants to learn more about the two coffee makers. The design and layout of the website content simulated recent studies on selective exposure in an online environment (e.g., Winter & Krämer, 2012). A message reminded participants’ previous coffee maker choice (e.g., “Previously, you selected coffee maker Q”). The remaining part of this
webpage contained headings for 16 online product reviews evenly distributed between valence and coffee maker choice. Of the 16 reviews, four headings contained positive information related to the selected coffee maker, four review headings contained negative information related to the selected coffee maker, four review headings contained positive information related to the alternative coffee maker, and four review headings contained information related to the alternative coffee maker.

Each review heading indicated (1) the coffee maker to which it referred (selected or alternative), (2) the review valence in the number of stars (1 star as the most negative and 5 stars as the most positive), and (3) a short title of the review (e.g., “I was very satisfied with the results.”). Each review heading served as a link to the textual contents of that specific review.

The textual content of the review, either positive or negative, contained between four to five sentences of subjective review about a coffee maker. The reviews applied universally to any coffee maker and did not contain any specific information regarding any coffee maker brand or attribute, reflecting merely valenced evaluative comments. After viewing the text, participants cycle back to the review title page.

The experimental design minimized any effects that attributable to the review source (i.e., writer of the review). The review page and corresponding text provided no reviewer information. Each review indicated, “A reviewer of this product said that ….” The bottom of each review provided a hyperlink back to the review title page.

Fig. 1. Online review title page.
Thus, participants might view a review and cycle back iteratively until finished. The experimenter asked the participants to use as much time as they would like to read reviews about the coffee maker selected and to complete the remaining components of the study privately. Meanwhile, the survey engine tracked participant survey activity and provided behavioral data regarding the specific reviews read, the order of the reviews read, the length of time spent reading each review, and the length of time spent viewing the main review title page with the review headings. Participants averaged 8.86 s reading one review. Then, the experimenter left the room and returned when the participants finished the remaining portion of the study including all induction check measures and a second measure of cognitive dissonance to assess post-selection dissonance (T2). Participants completed several measures reporting demographics (sex, age, major, ethnicity, and class-standing) and an outcome-relevant involvement measure. Finally, the experimenter debriefed participants, disclosed that no actual product were actually available, and thanked the participants.

6.6. Measures

6.6.1. Cognitive overlap

The score of attribute difference obtained from the two coffee makers that the participants selected during the decision task measured the degree of cognitive overlap. This difference was coded such that 1 reflected one attribute difference, with up to 5 attribute differences (M = 3.04, SD = 1.05).

6.6.2. Cognitive dissonance

Elliot and Devine (1994) validated psychological discomfort as a measure of cognitive dissonance using three 7-point semantic differential items. Participants indicated, “Please indicate how you feel about the decision made between the two products” with the items: comfortable/uncomfortable, easy/uneasy, and not bothered/bothered. To allow for tests of factor structure, the measure included four additional items: relaxed/anxious, satisfied/dissatisfied, simple/complicated, and certain/uncertain.

Confirmatory factor analysis revealed a poor unidimensional fit with all seven items, when allowing for variation in item quality χ²(20, N = 157) = 38.11, p < 0.01, under the internal consistency theorem. However, a measure including uncomfortable/comfortable, uneasy/easy, satisfied/unsatisfied, and certain/uncertain rendered strong support for unidimensional fit, χ²(5, N = 157) = 3.09, p = 0.69, with low overall model error (RMSE = 0.01). The current research utilized this 4-item version.

Participants completed the dissonance measure at two time periods. The first measure assessing post-decision dissonance (T1) was taken immediately after the making a decision between the two coffee makers (Cronbach’s α = 0.89; M = 2.22; SD = 1.08). The second measure assessing post-selection dissonance (T2) occurred after participants finished selecting and reading online reviews (Cronbach’s α = 0.91; M = 2.68; SD = 1.21).

6.6.3. Congeniality bias

Two methods assessed congeniality bias. First, a congeniality bias score followed the difference between the number of congenial versus congenial reviews participants read. A congenial review was either positive toward the selected coffee maker or negative toward the alternative coffee maker. An uncongenial review was either negative toward the selected coffee maker or positive toward the alternative coffee maker. A congeniality bias score above zero denoted a bias toward congenial reviews. Participants (n = 21 or 13%) who did not read any reviews were treated as missing data for analyses related to congeniality. Overall, participants expressed only a slight congeniality bias in the number of reviews read (M = 0.10, SD = 1.60), t(135) = 0.75, p = 0.45.

A second method of assessing congeniality bias involved computing the difference between the time spent reading congenial versus uncongenial reviews (Knobloch-Westrick & Meng, 2009). The survey tracked the time spent on each review. This time excluded time spent on the review title page. Participants who did not click on any reviews were treated as missing data for analyses related to congeniality. A positive time denoted the amount of additional time spent on congenial reviews in seconds, expressing a congeniality bias. Participants spent an average of 1.27 s more on congenial reviews (M = 20.53; SD = 16.37) than on uncongenial reviews (M = 19.26; SD = 17.14), t(135) = 1.12, p = 0.26.

6.6.4. Global confirmatory factory analysis

A confirmatory factory analysis using AMOS tested all original measures. The five-factor measurement model included post-decision dissonance, post-selection dissonance, first coffee maker attractiveness (discussed in a later section), second coffee maker attractiveness, and perceived similarity between coffee makers (discussed in a later section). This model provided a good overall fit for the data, χ²(150) = 267.38, p < 0.001, IFI = 0.95, CFI = 0.95, RMSEA = 0.07, SRMR = 0.05.

6.7. Induction check

6.7.1. Importance of the decision

Cho and Boster (2005) outcome-relevant involvement scale measured “the perception that important future consequences are at stake” (p. 239). The future consequence in the current study related to receiving the chosen coffee maker. The 8-item 7 point Likert-type involvement scale prompted participant’s to agree or disagree with the following statements such as: I found that the kind of coffee maker that I own has little impact on my life; and My life would be changed if a coffee maker brand that suites me perfectly were created (α = 0.89; M = 3.12; SD = 1.22).

This measure assessed whether the experimental inductions aroused the expected differences in outcome-relevant involvement. Participants in the important condition (M = 3.20, SD = 1.21) did not differ in their report of outcome-relevant involvement from those in the unimportant condition (M = 3.04, SD = 1.24), t(151) = 0.83, p = 0.410. This result countered past application of the importance procedure in cognitive dissonance research (e.g., Lschiuto & Perloff, 1967; Lee & Schwarz, 2010).

A review of Cho and Boster (2005) measure suggested that these items might pertain more to the enduring qualities of the product or brand rather than the immediate future consequence. A number of the items related future consequences of the product to one’s life, which might not bear as much relevance to the situation of receiving a coffee maker. In short, the scale might not have fully captured the personal importance of the induction given the situational nature of the importance induction.

6.7.2. Attractiveness of choices

An original 4-item 7-point semantic differential scale measured participants’ perceived attractiveness of the two coffee maker options. Participants rated each of the two coffee makers using the items: attractive/unattractive, high quality/low quality, desirable/un-desirable, and favorable/unfavorable (Cronbach’s α = 0.90). Confirmatory factor analysis demonstrated a good unidimensional fit when gradient in quality was allowed, χ²(5, N = 157) = 1.15, p = 0.95, RMSE < 0.01. A composite measure averaged the scores across the four items. For the coffee maker appearing first on participants’ ranked lists (second on the ranking task), participants reported attractiveness of 4.63 (SD = 1.02). For the coffee maker appearing second on participants’ ranked lists (third or seventh on the ranking
task), participants reported an attractiveness of 3.86 (SD = 1.30). The difference between the two coffee makers in attractiveness created a discrepancy score. Successful induction of attractiveness should reflect a higher discrepancy score for participants assigned to the attractive condition compared to participants assigned to the unattractive condition. Participants assigned to the attractiveness condition reported a higher discrepancy (M = 1.65, SD = 1.47) than those assigned to the unattractive condition (M = 0.86, SD = 1.19), t(148) = 3.63, p < 0.001, d = 0.60, supporting a successful induction.

6.7.3. Cognitive overlap
An original 4-item 7-point semantic differential scale measured participants’ perceived similarity in the features of the two coffee makers. Participants indicated, “Overall, I found that the two coffee maker options were...” with similar/dissimilar, alike/unalike, comparable/incomparable, and almost the same/ completely different (Cronbach’s α = 0.89; M = 3.48; SD = 1.37). Confirmatory factor analysis demonstrated a good unidimensional fit under the when gradient in quality is allowed, χ²(5, N = 157) = 4.47, p = 0.48, RMSE = 0.01.
This cognitive overlap measure should correlate negatively with coded differences of cognitive overlap that derived from calculating difference in coffee maker attributes. As expected, a higher perception of product similarity associated with a lower number of actual attribute difference, r = −0.34, p < 0.001.

6.7.4. Awareness check
One open-ended question assessed whether participants anticipated the study purpose and the presence of demand characteristics. Most participants reported that the purpose of the study related to understanding the effect of online reviews and how much people liked coffee makers. The data suggested that participants remained unaware of the study purpose.

6.8. Research question and hypothesis tests
The research question examined the relationship between importance of the decision, attractiveness of alternatives, and cognitive overlap on cognitive dissonance. A full-factorial General Linear Model explored this relationship with the attractiveness condition, the importance condition, and the coded difference in cognitive overlap predicting outcomes in the post-decision dissonance (T1), the measure taken after making a choice between two coffee makers. The model rendered a poor fit with the data (R² Adjusted = 0.04). Attractiveness of alternatives, F (1,113) = 2.06, p = 0.15, importance of the decision, F (1,138) = 1.77, p = 0.18, cognitive overlap, F (4,113) = 0.80, p = 0.53, along with all interaction terms, did not significantly predict post-decision dissonance. Table 1 and Table 2 contain all descriptive statistics and zero-order correlation among study variables in Study 1.

H1 proposed that after deciding between two options, cognitive dissonance influenced the selection of the congeniality of the reviews read (H1a) and the time spent on congenial reviews (H1b) over uncongenial reviews. Results indicate that post-decision (T1) dissonance did not correlate with the difference between the number of congenial versus uncongenial reviews read, r = 0.00, p = 0.97, or the difference in time spent on congenial versus uncongenial reviews, r = 0.07, p = 0.43. This result also occurred when examining the total number of congenial and uncongenial reviews separately. Cognitive dissonance failed to correlate with the total number of congenial reviews read, r = 0.16, p = 0.07, uncongenial reviews read, r = 0.14, p = 0.11, time spent on congenial reviews, r = 0.11, p = 0.19, and time spent on uncongenial reviews, r = 0.06, p = 0.52. In short, post-decision cognitive dissonance did not affect how participants selected reviews.

H2 examined the order of reviews selection. Regardless of assigned conditions, analysis confirmed that participants read congenial reviews earlier than uncongenial reviews. To conduct the analysis, the review order converted into ordinal ranks. For instance, an uncongenial review read third in the sequence counted as a three on the uncongenial review. Friedman’s nonparametric analysis of ranks demonstrated that participants selected congenial reviews (mean rank = 1.42) earlier than uncongenial reviews (mean rank = 1.56), χ²(1) = 10.84, p < 0.01.
The final hypothesis proposed that exposure to congenial online reviews affect post-selection (T2) dissonance that individuals experience after reading the reviews. The data revealed that reading congenial reviews correlated negatively with post-selection dissonance, r = −0.17, p < 0.05. This pattern repeated for time dissonance, r = −0.19, p < 0.05.
One possible concern is cognitive consistency when participants reported cognitive dissonance at the two repeated time points. Participants’ post-decision dissonance (T1) might affect the post-selection dissonance (T2). Two analyses addressed this concern. First, a partial correlation controlling post-decision dissonance showed that the effect remained for the discrepancy in congenial reviews, r = −0.20, p < 0.05, and the discrepancy in time, r = −0.26, p < 0.001. Second, the difference between post-decision and post-selection dissonance created a change score. This score also correlated with the discrepancy in congenial reviews read, r = −0.18, p < 0.05, and the difference in time, r = −0.26, p < 0.01. In sum, the data showed that the congenial exposure to information correlated with cognitive dissonance.

6.9. Discussion
In this study, the induction of importance did not achieve the intended effect in outcome-relevant involvement. One possible explanation was that the experimental induction included an uninvolving product at the product level and brand level. As a result, even the opportunity to receive such a product might not have affected outcome-relevant involvement, limiting the opportunity to create cognitive dissonance.
A useful finding involved the effect of reading reviews on the subsequent cognitive dissonance that participants reported. This study demonstrated that reading more congenial reviews overall might serve as an effective means of either reducing or increasing dissonance. In other words, the reviews that individuals read after a decision may affect how they comfortable or uncomfortable they feel about that decision.
In Study 1, a posthoc analysis of the post-decision dissonance (T1) (M = 2.19, SD = 0.09) and the post-selection dissonance (M = 2.71, SD = 1.23) showed a significant increase in cognitive dissonance overall, t(134) = 5.25, p < 0.001. In other words, reading more congenial reviews overall led to greater cognitive dissonance. This notion appeared to counter Festinger, 1957 theoretical contention that dissonance reduction motivates selective exposure to congenial information. However, there may be circumstances where finding congenial information may serve other motivational bases. For instance, decisions that elicit a higher outcome-relevant involvement differ from trivial decisions by triggering more accuracy motivation rather than decision-supportive motivation. One possibility is that the effect of reading reviews on cognitive dissonance may relate to the laboratory setting. Participants may have felt compelled to read more reviews under the guidance of an experimenter. Study 1 showed encouraging findings related to the effect of reading reviews on cognitive dissonance. Study 2 aimed to (1) replicate these effects, (2) minimize effects attributable to the laboratory setting by providing collect the results online.
Table 1
Descriptive statistics among study variables (Study 1).

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Range</th>
<th>Mean</th>
<th>Std. deviation</th>
</tr>
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<tr>
<td>Outcome-relevant involve</td>
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<td>1.22</td>
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<tr>
<td>Difference in product attractiveness</td>
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<td>1.38</td>
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<tr>
<td>Difference in the number of product attributes</td>
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<td>1.05</td>
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<tr>
<td>Ratings of product similarity</td>
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<tr>
<td>Post-decision dissonance</td>
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<tr>
<td>Post selection dissonance</td>
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</table>

Table 2
Zero-order correlation among study variables (Study 1).

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<th>Difference in product attributes</th>
<th>Ratings of product similarity</th>
<th>Difference in number of congenial vs uncongenial reviews</th>
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<th>Post-selection dissonance</th>
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</tr>
<tr>
<td>Ratings of product similarity</td>
<td>-0.16</td>
<td>0.35**</td>
<td>-0.34**</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Difference in number of congenial vs uncongenial reviews</td>
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<td>0.02</td>
<td>0.15</td>
<td>-0.14</td>
<td></td>
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<tr>
<td>Difference in time spent on congenial vs uncongenial reviews</td>
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<td>-0.05</td>
<td>0.08</td>
<td>-0.08</td>
<td>0.77**</td>
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<tr>
<td>Post-decision dissonance</td>
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<td>0.13</td>
<td>0.00</td>
<td>0.09</td>
<td>0.00</td>
<td>0.07</td>
<td></td>
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</tr>
<tr>
<td>Post-selection dissonance</td>
<td>-0.04</td>
<td>0.11</td>
<td>-0.03</td>
<td>0.05</td>
<td>-0.17**</td>
<td>-0.19**</td>
<td>0.48**</td>
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</tr>
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</table>

*p < 0.01 level.

*p < 0.05 level.

7. Study 2 (online replication)

7.1. Procedures and method

Study 2 repeated the general design in Study 1. A separate set of participants (n = 150) signed up using a department subject pool and received course credit for their participation. The mean age was 21.17 years (SD = 3.51) and more participants were female (68.2%). Instead of receiving verbal instructions from an experimenter, participants received text instructions using the Qualtrics online survey.

7.2. Results

The analyses focused on the replicating effect of reading reviews on cognitive dissonance. Unlike Study 1, a paired-samples t-test showed that participants did not significantly differ between their post-decision cognitive dissonance (T1) (M = 2.76, SD = 1.40) and their post-selection cognitive dissonance (T2) (M = 2.73, SD = 1.41), t(149) = 0.36, p = 0.72.

The next analyses examined if reading reviews affected cognitive dissonance. In Study 2, only 70 (47%) participants read one or more reviews, compared to 13% in Study 1. Excluding those who read no reviews, participants averaged reading 3.13 reviews. Accordingly, the analyses on the effect of reviews only included those who read one or more reviews.

Partial correlations analyzed effect of reading and time spent on reviews on post-selection cognitive dissonance (T2), statistically controlling post-decision cognitive dissonance (T1). As expected in the replication, the discrepancy in the number of congenial reviews versus uncongenial reviews read negatively correlated post-selection cognitive dissonance (T2), r = -0.28, p = 0.019. The discrepancy between the time spent on congenial versus uncongenial reviews also correlated in a similar pattern, r = -0.34, p = 0.005.

8. Overall discussion

The major contributions in this research is threefold. First, the results provided empirical evidence that contributed to alter the generalized perspective that online reviews only serve a persuasive function (e.g., Walther & Jang, 2012). From a communication standpoint, the results introduced a duality in how messages in the form of online review may affect readers. An online review could either potentially propel readers toward a decision (e.g., Walther et al., 2012) or affect cognitive dissonance after a decision. This notion suggests that the key to understanding the differential effect of online reviews is to identify the readers’ motivational state. Some managerial implications are elaborated at a later section. One argument advanced in this research is that the effects are more likely to be salient online, especially when readers encounter a plethora of reviews. An extension of the findings may even apply to the cues that readers use to glean and select reviews. Due to overload, online readers already glean cues for sorting purposes. The current study provide evidence that the online cues, in terms of valence, may be strategically targeted and selected given their purpose in the decision-making process. Although the current study utilized star ratings as cues for valence, other cues, such as...
helpfulness ratings and credibility badges on Amazon.com, may potentially also serve to aid aspects of dissonance reduction. Second, the current research extended the applicability of cognitive dissonance theory to the online review context. There was evidence of congruency bias in the selection behavior from Study 1. Taken together, the results suggest that readers may glean other types of online messages to affect cognitive dissonance. Examples include Facebook posts, blog posts, and possibly even Instagram. Each of these systems has their own set of cues, which may yield interesting directions for future work on the role of dissonance across various online contexts. Third, readings reviews increased overall cognitive dissonance. At the same time, the review reading correlated with the dissonance such that reading more congenially actually decreased dissonance. One possibility is that online reviews provided cues that triggered accuracy motivation while simultaneously reducing cognitive dissonance as Fischer and Greitemeyer (2010) proposed in their new model of selective exposure. Although the exact dynamic is unclear given the data from the current research.

From a congeniality bias perspective, the current study yielded only one test of how individuals select online information. Several idiosyncratic features of this study may offer some alternative explanations in light of cognitive dissonance theory. The data might even be interpreted to reflect support for alternative forms of dissonance reduction. Specifically, these forms of dissonance reduction might include scanning review titles to reduce dissonance, avoiding certain reviews altogether, and using unconvincing reviews to reduce dissonance. It is possible that the study protocols facilitated such effects. Furthermore, cognitive dissonance theory does not specify conditions under which active behavioral (e.g., seeking congenial reviews), cognitive (e.g., mentally changing perceptions regarding the behavior), or passive strategies (e.g., avoiding any reviews) for dissonance reduction may operate. Instead, certain processes may become salient under certain conditions. A challenge for research is to identify the relative effects of these simultaneous processes and their contribution to the growing popular context of online review selection.

Despite the alternative interpretations, the main findings established a clear effect of reading reviews on cognitive dissonance. Although research on the effects of online reviews typically examine attitudes, motivational factors such as cognitive dissonance preclude consumer product regret. Moreover, the results offer some practical managerial implications in participatory website environments. Online retailers may apply the findings from the current study to encourage consumers who previously made purchase decisions to read online reviews. Moreover, after a purchase, retailers may expose consumers to more congenial reviews to aid them in dissonance reduction. Perhaps one indirect approach already utilized by retailers involves asking consumers to write reviews for products they purchased. Conceivably, consumers may examine other online reviews, and especially congenial ones like those shown in the current study, during this process to justify the review they are about to write. The relationship between the message construction of online reviews and dissonance reduction may merit future research pursuits.

In conclusion, the results in the current study serve as a basis for future investigations from a post-decision perspective. The study showed that participants employed active behavioral strategies of online review selection by seeking congenial reviews earlier than unconvincing reviews. However, there were also alternative strategies for reducing dissonance. After participants read the reviews they selected, reading more congenial reviews overall reduced dissonance. This study demonstrated that cognitive dissonance theory offers promise as a theoretical framework for understanding how individuals read and use their online reviews.

References


