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Examining Biased Assimilation of Brand-related Online Reviews

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Abstract

This paper examines the impact of pre-existing brand attitudes on consumer processing of electronic word-of-mouth (eWOM). This topic is particularly important for brands that simultaneously possess strongly pronounced proponents as well as opponents. Two experimental studies using univalent (study 1, N= 538) and mixed (study 2, N= 262) sets of online reviews find indications for biased assimilation effects of eWOM processing. Consumers perceive positive (negative) arguments in online reviews as more (less) persuasive when having a positive (negative) attitude towards the brand. Perceived persuasiveness in turn influences behavioral intentions and acts as a mediator on the relationship between attitude and consumer intentions. We examine two moderators of this effect. When priming individuals to focus on other consumers (vs. a self-focus prime), the biased assimilation effect is weaker (study 3a, N= 131). In contrast, we show that biased assimilation becomes stronger under conditions of high (vs. low) cognitive impairment (study 3b, N= 124). Our findings contribute to the literature on the relationship between eWOM and brands and advance our understanding of potential outcomes of brand polarization.

Keywords: Biased assimilation; eWOM; Online reviews; Moderated mediation; Branding

¹ All three authors contributed equally to this manuscript.

1. Introduction

Contrary to the widespread assumption that brands are less influential in the face of electronic word-of-mouth (eWOM) information, recent research suggests that the performance of strong brands is not significantly affected by eWOM (Ho-Dac, Carson and Moore 2013). At the same time, Luo, Raithel, and Wiles (2013) show that brands should not be viewed as being unequivocally strong or weak, but that brand measures, such as brand equity, are rather blurry aggregates of diverse consumer opinions. Consequently, consumer opinions about brands may be more polarized and heterogeneous than previously postulated (Brexendorf, Bayus and Keller 2015). While some consumers nurse strong positive feelings, others have strong negative feelings towards brands. This leads us to question whether cognitive processing of brand-related eWOM information could be influenced by strongly pronounced consumer opinions about a brand. Understanding individual-level differences in eWOM processing is important for firms, as modern consumers decisively rely on other consumers' opinions (Berger 2014).

EWOM is seen as one of the strongest drivers of firm success in the 21st century (McKinsey 2012) and has, for instance, been used by researchers as an aggregate measure of consumer preferences (Decker and Trusov 2010). EWOM is widely disseminated, easily accessible, and considered a highly credible and influential source of information (Cheong and Morrison 2008). Online consumer reviews constitute a particularly prominent form of eWOM and are available for a large range of products and services. More importantly, online reviews are a type of eWOM information that a lot of consumers are often confronted with even though they are not specifically looking for it. For example if a consumer is looking up a certain restaurant that he or she believes to be highly acclaimed, there will usually be not only positive eWOM from like-minded consumers, but also negative eWOM that goes against the consumer's own opinion. Confrontation with such information is seldom sought after, but occurs inadvertently while surfing the Internet for information. In sum, the impact of online

reviews on consumer behavior could depend on individual cognition processes that are biased by prior dispositions towards the firm or brand, a process that is also known as ‘biased assimilation’ (Lord, Ross and Lepper 1979). Previously, this bias has been investigated mainly with regard to attitude on principle questions in life, such as presidential candidates (Munro et al. 2002) or death penalty (Lord, Ross and Lepper, 1979). In recent years, research has found strong evidence of an intensification of consumer-brand relationships and the psychological and economical consequences of these relationships. Concepts such as brand attachment (Park et al. 2010), brand love (Batra, Ahuvia and Bagozzi 2012) and brands as relationship partners (Fournier and Alvarez 2012) signify this intensification of distinct opinions of and attitudes towards brands. As consumers’ relationships with brands and subsequent positive or negative predispositions have been intensifying in recent years (e.g. Batra, Ahuvia and Bagozzi 2012) we propose that this biased assimilation effect could also occur during consumers’ exposure to brand-related information in form of online reviews. We further propose that this bias is subject to certain boundary conditions that can increase or reduce its influence on consumers’ information processing.

In four experimental studies we first show how biased assimilation affects perception of positive, negative, and mixed sets of brand-related online reviews, and how this perception bias subsequently influences behavioral intentions. Contrary to the finding that consumers strive to rely on information sources which portray consistent opinions (Chen et al. 2004), we find that consumer’s response to such information sources is dependent on own prior beliefs. Then, we examine how the strength of this bias can be diminished or amplified. Our research contributes to the literature on branding by adding to the theoretical understanding of brand polarization and its consequences for consumer behavior. In addition, we extend the literature on eWOM and brands by showing how different levels of brand-related attitudes lead to a processing bias of eWOM information that affects consumers’ behavioral intentions. In

particular, our research sheds new light on consumer processing of balanced mixed-valence sets of online reviews (Purnawirawan, De Pelsmacker and Dens 2012) and suggests that the absence of effects in prior research could be due to unaccounted individual differences in review processing. We also contribute to the literature on biased assimilation by identifying two important moderators – other-focus and cognitive impairment – that can either reduce or increase the biased assimilation effect and therefore extend prior research in this domain. Our findings suggest that priming consumers with an other-focus reduces biased assimilation because considering others’ opinions increases the acceptance of opposing information. Furthermore, individuals’ cognitive capacity seems to play an important role when testing for biased assimilation effects because the availability of cognitive resources impacts the strength of the bias.

In this article, we first review the literature on eWOM and brand attitude and discuss the biased assimilation effect within this context. Second, we build on this literature review by developing our main hypotheses. Third, we describe the first series of experiments (studies 1 and 2) and discuss our findings. Fourth, two moderators to the obtained effects are discussed and tested (studies 3a and 3b). We conclude the article with a discussion of our results and provide an outline of implications for researchers and practitioners.

2. The Relationship Between Online Reviews and Polarized Brand Attitudes

The role of individual-level antecedents that impact consumers’ perception and processing of eWOM information remains a relevant gap in eWOM research (King, Racherla, and Bush 2014). Although brand attitudes have repeatedly been shown to exert a strong and persistent influence on consumer processing (Plassmann, Ramsøy, and Milosavljevic 2012), the connection between online reviews and brands in the literature is scarce. This specific gap is relevant as recent research indicates that the impact of online reviews is diminished when it comes to strong brands. Ho-Dac, Carson, and Moore (2013) find that brand strength

moderates the impact of online reviews on purchase behavior, with online reviews having a strong impact on weak brands but not significantly impacting the performance of strong brands. A meta-analysis on the effects of eWOM proposes that the increased risk associated with less popular brands leads to them being more likely to be influenced by eWOM (You, Vadakkepatt and Joshi 2015). However, we argue that a more fine-grained view of strong brands, with a particular focus on polarizing brands, is in order. A strong brand is not necessarily liked by every customer but can embody dispersion, which is characterized as a large heterogeneity in brand quality ratings (Luo, Raithel and Wiles 2013). Strong brands like *McDonalds*, *Starbucks*, or *Abercrombie & Fitch*, often polarize customer opinions and possess groups of both fierce proponents and opponents of the brand. *Starbucks*, for example, is featured on fan websites (e.g. starbuckcoffee.net) as well as on critical websites (e.g. ihatestarbucks.com). This phenomenon of brand dispersion and polarization encompasses a relatively new research area in marketing. Luo, Raithel and Wiles (2013) were the first to find that brand dispersion can have competing effects on stock performance, with positive effects in the form of a reduction of firm idiosyncratic risk and negative effects in the form of lower abnormal returns. This underlines the importance of brand dispersion and polarization from a managerial perspective and suggests that both poles of consumer opinions should be taken into account when deploying brand strategies. Apart from these findings on an aggregate level, however, little is known about outcomes of polarizing brands and how opponents and proponents of a strong brand process brand-related information.

2.1 Brand Attitude Polarization

We propose that the polarizing nature of a strong brand matters when studying consumer processing of online review information and that such information is not processed equally by all consumers. In the following, we use the concept of brand attitude to capture brand polarization. Brand attitude constitutes one of the most widely studied concepts in

marketing and is of high relevance for firms due to its influence on variables like purchase intention or brand choice (e.g. Priester et al. 2004). Brand attitude is usually captured on dimensions of valence that stand for the positive and negative poles of a respondent's attitude towards the brand. As these two poles represent a clear positive (negative) opinion about a brand and were repeatedly shown to be connected to respective positive (negative) behavioral intentions (e.g. Park et al. 2010; Maison, Greenwald and Bruin 2004), this concept is particularly suitable to capture diverging poles in consumer opinions about a brand. Other concepts which capture brand-related opinions, such as brand attachment (Park et al. 2010) or brand love (Batra, Ahuvia and Bagozzi 2012) only range from weak to strong levels of attachment or love and are hence not ideal to capture proponents as well as opponents. While individuals with low levels of love or brand attachment may be proponents of a brand, the properties of both measurement scales do not specifically capture negative brand opinions. This paper therefore examines a strong brand, which possesses consumers with positive as well as consumers with negative attitudes towards the brand (i.e. "opponents" and "proponents") and argues that reactions to online reviews differ depending on individual levels of brand attitude.

2.2 Biased Assimilation of Information

Social cognition research has demonstrated that previously held beliefs and attitudes can have a strong influence on information processing (Lord, Ross and Lepper 1979). Opponents and proponents of certain topics were shown to interpret identical pieces of information differently and in accordance to their already existing viewpoints. While individuals accept information and regard it as convincing when it confirms their prior beliefs, they discount the same piece of information and regard it as unconvincing if it opposes their initial viewpoint, which characterizes a phenomenon known as biased assimilation (Lord, Ross and Lepper 1979; Munro, Ditto and Lockhart 2002; Munro 2010). As biased assimilation leads

individuals to evaluate belief-consistent information more favorably than belief-inconsistent information, this phenomenon works as a psychological barrier to the revision of initial judgment (Greitemeyer et al. 2009). This bias is especially interesting as it can lead to irrational cognitive processes, where otherwise strong and plausible arguments for a certain position are discounted if they oppose prior beliefs. Biased assimilation has been used to study information processing for a variety of topics, such as capital punishment (Lord, Ross and Lepper 1979), guilt attributions in trial processes (Wiener, Wiener and Grisso 1989), and the evaluation of political debates (Munro, Ditto and Lockhart 2002). However, these topics are arguably all rather important individual beliefs about fundamental societal issues. Therefore, finding such an effect also for brand attitude would give further indication for the growing intensity of consumer-brand relationships and extend our knowledge on the impact of brand assessments on consumers' cognitive processes (Rucker et al. 2014).

Drawing on the biased assimilation effect, we argue that an identical online review message could be perceived differently, depending on the level of brand attitude. In particular, we focus on the perception of message persuasiveness of online reviews, which is a determining eWOM characteristic (Cheung and Thadani 2012). When looking at online reviews, consumers not only pay attention to summary statistics such as stars, but often study the online review text itself and judge the persuasiveness of its arguments (Mudambi and Schuff 2010). Research on persuasiveness and online reviews finds that when a set of online reviews displays conclusive information, individuals are likely to find this information persuasive (Park and Park 2013) and rely on this information when making their own decision (Chen et al. 2004). However, biased assimilation would suggest that if prior opinions are very prominent (e.g., when a brand is strongly liked or disliked), disconfirming information should be discounted, regardless of the conclusiveness of available information sources. If predispositions in the form of brand attitude bias the perception of online reviews, we should

see individuals with positive brand attitude values judge a positive online review as more persuasive as compared to a negative online review. In contrast, we would expect the opposite effect for individuals with negative brand attitude values. In this case, a negative online review should be perceived as more persuasive. Therefore, we hypothesize:

H1: Individuals judge argument persuasiveness of online reviews in assimilation with their brand attitude.

Following this line of reasoning, we argue that this perception bias should also impact consumers' behavioral intentions, depending on online review valence. Prior research has shown that review valence significantly impacts online review processing (Schlosser 2011) and the effect of online reviews on firm performance (Minnema et al. 2016). Specifically, we propose that when exposing consumers to online review information, brand attitude has an indirect effect on behavioral intentions through perceived review persuasiveness and that this effect differs for positive and negative online reviews. More specifically, when processing positive online reviews, an increase in brand attitude should result in a higher level of perceived argument persuasiveness due to biased assimilation. Research in human decision making indicates that individual decision making is often a function of the persuasiveness of the arguments that the individual is exposed to prior to the decision outcome (El-Shinnawy and Vinze 1998). Subsequently, consumers will be more likely to use a message as decision input the higher they judge its persuasiveness (Chaiken 1987; Purnawirawan, De Pelsmacker and Dens 2012). Concerning the exposure to negative online reviews, however, biased assimilation suggests a negative impact of brand attitude on perceived argument persuasiveness. If consumers regard a message as non-persuasive and consisting of low quality (Ditto et al. 1998), they will be less likely to base their actions on it. For negative online reviews, we therefore expect that brand attitude negatively influences argument persuasiveness, which in turn negatively influences behavioral intentions. We theorize that the

differential evaluation of online reviews' persuasiveness is the process underlying the effect of brand attitude on behavioral intentions.

Therefore, we hypothesize that perceived argument persuasiveness should mediate the effect of brand attitude on behavioral intentions.

H2: In conditions of positive (negative) online reviews, argument persuasiveness mediates the effect of brand attitude on behavioral intentions in form of a positive (negative) indirect effect.

Regarding the direct effect, an increase in brand attitude was shown to lead to stronger positive emotional connections and loyalty intentions regarding the brand (Batra, Ahuvia and Bagozzi 2012), therefore an increase in brand attitude should have a positive impact on behavioral intentions, regardless of whether the consumer is exposed to positive or negative online reviews.

3. Stimuli Development

Pretest 1 – Selection of a polarizing brand

In order to identify an adequately strong and polarizing brand for the study, five brands were subjected to a pretest, namely *Abercrombie & Fitch*, *Apple*, *McDonald's*, *Miracle Whip* and *Starbucks*. Recent research based on the YouGov Index (Luo, Wiles and Raithel 2013) as well as initial discussions with faculty members and students indicated that each of these brands seemed to possess a large share of both, opponents and proponents, thus making them potentially suitable for our study. N= 84 participants recruited through Amazon's Mechanical Turk filled out a short survey about the five brands in return for a nominal fee. Respondents were questioned about the brands in randomized order and rated them in terms of brand attitude. Therefore, three items from Park et al. (2010) were adapted which asked respondents to indicate the extent to which they viewed the respective brand as “good” versus “bad” and “positive” versus “negative” and the extent to which they “liked it” versus “disliked it” ($\alpha=$

.94) on a bipolar scale, ranging from -3 (e.g. dislike it) to +3 (e.g. like it). Next, we calculated an index from the scores on the three attitude items. The results showed most clear-cut findings for the brand *McDonald's* ($\partial_{McDonald's}^2 = 2.74, sd = 1.66$), as it encompassed a large and balanced distribution of individuals with a positive and a negative brand attitude. In addition, the *McDonald's* brand is often subject to publicity, newspaper articles, and blog entries that showcase the polarization of individuals' opinions about the brand (McIntyre 2014). More importantly, service companies, such as restaurant chains, are increasingly covered on online review websites such as *yelp.com* or *tripadvisor.com*. These websites aim at helping consumers to make better decisions on where to go out for meals and are increasingly viewed as a success factor for service brands (Hennig-Thurau et al. 2010). Additionally, online reviews often pop up unsolicitedly when surfing the Internet, for example when looking for locations on Google Maps. Hence, both, customers actively and non-actively looking for online reviews, are frequently exposed to this information source. This also makes it likely that opponents and proponents of the brand get in contact with this information source. *McDonald's* was therefore chosen as an adequate polarizing brand for further analysis.

Pretest 2 – Selection of online consumer reviews

The aim of the second pretest was to identify credible and realistic online review texts with precise wording and a distinct positive (negative) valence. An initial pool of 28 review texts (14 positive, 14 negative) was created by modifying and adapting authentic *McDonald's* online reviews from websites like *yelp.com*, *tripadvisor.com* or *trustpilot.com*. We took care to construct the review texts identical in both valence conditions with the exception of the respective positive (negative) cues. We also ensured that the online reviews made no specific reference to certain products (e.g. *Big Mac* or *McFlurry*) or distinct restaurant locations (e.g. *McDonald's Arts District, Downtown Los Angeles*). Respondents were again recruited

through Amazon's Mechanical Turk (N= 46). Respondents were exposed to the online reviews in randomized order and rated their valence on a 7-point Likert-type scale ranging from -3 (very negative) to +3 (very positive). Respondents also rated each review in terms of perceived realism on a scale from 1 (not at all realistic) to 7 (very realistic). Eight online reviews (four positive and four negative online reviews) which were perceived as being realistic ($M_{Real_{pos}} = 4.54$, $sd = 1.13$, $M_{Real_{neg}} = 4.19$, $sd = 1.30$), and distinctly positive (negative) were chosen for the main study ($M_{Val_{pos}} = 2.58$, $sd = .75$, $M_{Val_{neg}} = -2.58$, $sd = .70$). The respective online reviews can be found in appendix A.

4. Study 1: Univalent Online Reviews

N= 538 respondents ($M_{age}=33$, 64% male) recruited through Amazon's Mechanical Turk participated in the study. The experiment was set up as a between-subjects design, with the manipulation of review set valence (positive and negative). Participants were randomly assigned to one of the two valence conditions. The procedure of the experiment was the following: Respondents first rated their brand attitude (3 items, $\alpha = .94$) towards *McDonald's*, again using the scale from Park et al. (2010). In order to encourage thinking about the brand *McDonald's* as a whole, respondents were asked to consider feelings about the brand's logo and packaging but also aspects of product and service quality, trust, and perceptions about the emotions and values that this brand portrays (Batra, Ahuvia and Bagozzi 2012). Respondents were then subjected to an unrelated filler task to minimize potential demand effects. Afterwards, respondents were exposed to the set of four online reviews in randomized order, with review set valence being either positive (four positive online reviews) or negative (four negative online reviews).

After exposure to an overview of the entire review set, participants rated each individual online review on one item in terms of valence (ranging from -3 (very negative) to +3 (very positive)), and on two items in terms of perceived argument persuasiveness. Perceived

argument persuasiveness was measured with two items adapted from Munro et al (2002), namely *“How strong are the arguments presented in this online review?”* and *“How convincing is this online review?”*, on a scale ranging from 1 (not at all) to 7 (very much), $\alpha = .87$. At the end of the survey, respondents indicated behavioral intentions in terms of purchase intention and WOM intention. Purchase intention was measured through a single-item measure adapted from Bergkvist and Rossiter (2009) *“If you were going to go out for a fast food restaurant, how likely would you be to go to McDonald's?”* on a scale ranging from 1 (no chance) to 7 (practically certain). WOM intention was measured with two items from Brown et al. (2005): *“If a friend was going out to eat, how likely is it that you would recommend McDonald's?”* and *“I will recommend McDonald's to my friends and colleagues”* on a scale from 1 (not at all) to 7 (very much). Purchase intention and WOM intention were combined to form a behavioral intentions measure ($\alpha = .90$). Lastly, respondents gave demographic information and a suspicion probe before receiving a short debriefing. None of the participants guessed our research hypothesis correctly. Detailed information on the respective scales can be found in appendix B.

Results

Manipulation checks confirmed that respondents rated the positive online reviews as being significantly more positive than the negative ones ($M_{ValPos} = 2.0$, $M_{ValNeg} = -2.4$, all mean differences for positive and negative online reviews are significant at $p < .01$). Following our line of thought on biased assimilation, we expect individuals to judge online reviews in accordance with their brand attitude. To test our hypotheses we apply a moderated mediation model as visualized in figure 1 using brand attitude as the independent variable, behavioral intentions as the dependent variable, argument persuasiveness as the mediator and review valence as the first and second stage moderator. Corresponding to our experimental manipulation, valence is modeled as a dummy variable z with $z = -1$ for negative online

reviews and $z = 1$ for positive online reviews, whereas brand attitude is a non-manipulated measure. We included brand attitude as a continuous variable and decided against a median split procedure, as the continuous variable allows for greater interpretability of individual heterogeneity as opposed to group differences (Iacobucci et al 2015).

[Insert Figure A.1 here]

To test for moderated mediation, we estimated a conditional process model using a bootstrap procedure and bias-accelerated confidence intervals (model 58, Hayes 2013). Brand attitude was entered as the independent variable, online review valence was entered as the first and second stage moderator, argument persuasiveness was entered as the mediator, and behavioral intentions as the dependent variable. The table displays the results for the mediator and the outcome variable model with argument persuasiveness and behavioral intentions as the dependent variables. The moderated mediation model accounts for 14% of the variance in argument persuasiveness and 60% of the variance in behavioral intentions. Both interaction effects are significant ($p < .01$) and different from zero (i.e. $X \times W = .25$ and $M \times W = .24$).

[Insert Table A.1 here]

Argument Persuasiveness of Positive Versus Negative Online Consumer Reviews

The full-effect model with the brand attitude $\times$ valence ($X \times W$) interaction explains significantly more variance of argument persuasiveness than the main effects model (R^2 increase due to interaction .09, $p < .01$). This significant first stage interaction of brand attitude and valence (see table 1) therefore exemplifies that individuals seem to judge argument persuasiveness of online reviews in assimilation with their brand attitude. The interaction works in such a way that individuals with negative brand attitude perceive negative reviews as more persuasive and individuals with positive attitude perceive positive reviews as more persuasive. We explicate this interaction across both review valence conditions (positive and negative) using the procedure described by Irwin and McClelland (2001). To study the nature

of the interaction, simple slopes for the relationship between brand attitude and argument persuasiveness were tested for both valence conditions. The respective conditional effects of brand attitude are both significant. Whereas a negative relationship between brand attitude and argument persuasiveness is found for negative online reviews ($b = -.22$, $t = -4.69$, $p < .01$), a positive relationship occurs for positive online reviews ($b = .27$, $t = 5.55$, $p < .01$). Figure 2 plots the simple slopes for the interaction of brand attitude and valence with part (a) visualizing the relationship between brand attitude and perceived persuasiveness of online reviews in the different valence conditions and part (b) explicating the nature of the interaction across different values of brand attitude.

[Insert Figure A.2 here]

Thus, when being confronted with univalent online reviews, individuals with negative brand attitude values (opponents of the brand) tend to perceive negative online reviews as more persuasive as compared to positive online reviews, while individuals with positive brand attitude values (proponents of the brand) tend to perceive positive online reviews as relatively more persuasive. Applying the Johnson-Neyman technique (Spiller et al. 2013) allows us to identify the specific regions along the brand attitude continuum where the relationship between review valence and argument persuasiveness is statistically significant. In accordance with our line of thought, the analysis reveals that for brand attitude values below -1.5 the relationship is significantly negative ($p < .05$) and for brand attitude values above $-.4$ the relationship is significantly positive ($p < .05$), leaving a small non-significant region in between where review valence and argument persuasiveness are not systematically related. Overall, these results provide strong evidence for our first hypothesis and the idea that biased assimilation influences the perception and processing of online reviews.

Impact of the Perception Bias on Consumers' Behavioral Intentions

To examine whether this biased perception of argument persuasiveness subsequently has an effect on customers' behavioral intentions (H2), we focus on the mediating effect of persuasiveness on the relationship between brand attitude and behavioral intentions which we propose to be moderated through review valence. The results documented in table 1 indicate the presence of moderated mediation. In accordance with our reasoning that the effect of brand attitude on behavioral intentions should not depend on the moderator, we do not find a significant interaction here. The effect of the independent variable on the mediator ($X \times W$), as already discussed above, as well as the effect of the mediator on the dependent variable (second stage) do depend on the moderator ($M \times W$). Given the significant interactions, the indirect effect is probed by conditional indirect effects at values of the moderator ($W = -1$ and $W = 1$, see table 1). Both effects are positive and significantly different from zero. Thus, the biased perception of review persuasiveness translates to behavioral intentions, depending on review valence.

Individual mediational analyses for each condition of the moderator separately further clarify the results. The unstandardized regression weights for the path from the predictor to the mediator are $b = .27$ ($t = 5.85$, $p < .01$) for positive and $b = -.22$ ($t = -4.49$, $p < .01$) for negative online reviews. The estimates for the path from the mediator to the outcome variable are $b = .28$ ($t = 5.15$, $p < .01$) for positive and $b = -.19$ ($t = 4.21$, $p < .01$) for negative online reviews. Thus, for positive online reviews, we find a positive relationship between brand attitude and argument persuasiveness that translates into a positive effect on behavioral intentions whereas for negative online reviews brand attitude is negatively related to persuasiveness which in turn is negatively related to behavioral intentions. Effect sizes for the positive and negative valence condition are medium and small with $\kappa^2 = .12$, 95% CI [.06, .18] for positive reviews and $\kappa^2 = .07$, 95% CI [.03, .12] for negative reviews.

Overall, the results indicate that biased perception of argument persuasiveness translates to consumers' behavioral intentions (H2). Attitude-confirming review information will be regarded as more persuasive and will hence have a strong (positive or negative) impact on behavioral intentions. As disconfirming information, in contrast, will not be regarded as highly persuasive, the impact on behavioral intentions will be low.

5. Study 2: Mixed-valence Online Reviews

The results from study 1 suggest that biased assimilation affects consumer processing of online reviews for either positive reviews or negative reviews. Study 2 aims to extend our findings to conditions where consumers are simultaneously confronted with positive and negative reviews. We choose this setting for three reasons: First, although univalent combinations of online reviews are not a rare occurrence on review websites, there are often cases where some reviews evaluate a product or service as positive while others evaluate the same product or service as negative. In addition, many online retailers (e.g. amazon.com) display the most helpful positive and negative online reviews next to each other to enhance website functionality (Spool 2009). Prior research on the effect of balance and sequence in review sets found that such an ambiguous combination of positive and negative online reviews cancels out the initial positive (negative) effects of online reviews on consumer decision making (Purnawirawan, De Pelsmacker and Dens 2012). The underlying rationale is that consumers find ambiguous information less clear and useful for their decision because it is inconsistent and requires more cognitive effort from consumers (van Dijk and Zeelenberg 2003; Forman, Ghose and Wiesenfeld 2008). However, we theorize that the absence of an effect of online reviews on consumer decision making could be due to unaccounted individual heterogeneity in consumers' online review evaluations. As the biased assimilation effect suggests, consumers should exhibit the same processing bias to make sense of a mixed-valence set of online reviews because the degree of persuasiveness for any message is

determined by their initial attitudes. Their inclination to evaluate belief-confirming information as more persuasive should occur regardless of whether other, belief-disconfirming information is present simultaneously or not (Munro and Ditto 1997).

Second, the mediating effect of argument persuasiveness in study 1 could be subject to an overestimation due to a non-naturalistic manipulation setting (Preacher and Kelly 2011). Therefore it is sensible to study the persistence of the mediation effect in a mixed-valence review condition that more closely resembles real-life experiences. In sum, we expect consumers with positive (negative) brand attitude to rate argument persuasiveness of the positive (negative) online reviews of a mixed set higher as compared to the negative (positive) online reviews in the same set of online online reviews. In accordance with the reasoning of study 1, we expect biased perception of argument persuasiveness to mediate the relationship between brand attitude and behavioral intentions.

Third, a biased assimilation effect should only outlast ambivalent information if the underlying attitude is strong enough to mask opposing arguments. Being confronted with alternative positions could lead consumers to question their initial assessment and contemplate the possibility that this assessment might not be accurate (Rucker et al. 2014). Therefore, a replication of the biased assimilation effect in mixed-valence review sets would support the robustness of the results from study 1 and speak as further indication that consumer attitudes towards brands induce a strong cognitive bias when it comes to the persuasiveness of information.

Method and Procedure

The setup of the experiment was identical to that of study 1 with the exception that each respondent was now exposed to two positive and two negative online reviews in a randomized combination. The reviews were again selected from the pretested pool of four negative and

four positive reviews from study 1. N= 262 ($M_{age}= 32$, 63% male) respondents from Amazon's Mechanical Turk participated in the study.

Results

The analysis was carried out similarly to study 1. To rule out any effects of the sequence of review exposure, we conducted an ANOVA with review sequence and brand attitude as the independent variables and argument persuasiveness as the dependent variable. The results revealed neither a significant main effect of review sequence ($F= .162$, $p= .976$), nor a significant interaction effect between review sequence and brand attitude on argument persuasiveness ($F= 1.208$, $p= .159$). To test whether the mediation effect of argument persuasiveness on the impact of brand attitude on behavioral intentions persists in conditions of mixed-valence review sets, we conducted a mediation analysis (model 4, Hayes 2013). To account for potential differences in the perception of positive and negative online reviews within the mixed-valence condition, we calculated the difference between argument persuasiveness for positive and negative online reviews. This resulted in a new measure, Δ Persuasiveness, with values ranging from -6 to 6. For example, a value of -6 indicates that the respondent perceived positive online reviews as not at all persuasive and negative online reviews as completely persuasive while a value of 6 indicates the opposite. Δ Persuasiveness was entered as the mediator in this model. Figure 3 depicts the full mediation model.

[Insert Figure A.3 here]

The mediation model with brand attitude as the independent variable, Δ Persuasiveness as the mediator and behavioral intentions as the dependent variable accounted for 15% of the variance in Δ Persuasiveness and 66% of the variance in behavioral intentions. Brand attitude has a significant positive effect on Δ Persuasiveness ($b= .45$, $t= 5.95$, $p<.01$). This means that for negative levels of brand attitude, respondents perceived negative online reviews as more persuasive (Δ Persuasiveness <0), while for positive levels of brand attitude respondents

perceived positive online reviews as more persuasive ($\Delta\text{Persuasiveness} > 0$). Furthermore, $\Delta\text{Persuasiveness}$ had a significant positive effect on behavioral intentions ($b = .15$, $t = 3.41$, $p < .01$). When positive reviews are perceived as more persuasive ($\Delta\text{Persuasiveness} > 0$), individuals are more likely to act upon this recommendation and discount negative opinions. On the other hand, when negative online reviews are perceived as more persuasive ($\Delta\text{Persuasiveness} < 0$), individuals are less likely to buy or recommend the brand. Results also show a significant, medium sized indirect effect ($b = .068$) of brand attitude through $\Delta\text{Persuasiveness}$ on behavioral intentions (H2), with $\kappa^2 = .11$, 95% CI [.05, .18]. In sum, these results again indicate that when individual's brand attitude leads to a processing bias in argument persuasiveness because belief-confirming information is perceived as more persuasive than belief-disconfirming information (H1). This bias again translates onto their subsequent behavioral intentions (H2), even when the present set of information suggests ambiguous opinions about the brand in the form of mixed valence sets of reviews.

6. Discussion of Studies 1 and 2

Our results thus far indicate that individual processing of online reviews about a brand seems to be biased depending on respondents' attitude towards that brand. More specifically, proponents and opponents of a brand were shown to exhibit differential processing of online review messages, as their prior attitude towards the brand determines subsequent perceptions of the reviews' persuasiveness. This biased assimilation of online reviews occurred regardless of the presentation of the online reviews in a univalent (study 1) or mixed-valence set of reviews (study 2). However, it remains unclear whether this effect is subject to boundary conditions that determine the strength of the assimilation bias. Biased assimilation seems to have drastic effects on consumer perceptions and behavioral intentions, even in "everyday" activities like processing online review information. This makes it important to understand under which conditions the effect is increased or reduced (Lord and Taylor 2009). Next, we

discuss two potential moderators of the biased assimilation effect, thereby adding novel insights to biased assimilation theory and providing important evidence on the persistence of the bias in consumer judgments (Bargh 2002).

Potential Boundary Conditions to the Biased Assimilation Effect

The nonconscious character of the biased assimilation effect entails the potential for moderating factors to change the strength of its influence on evaluative processes. We propose other-focus and cognitive impairment as two potential moderators that either reduce (other-focus) or increase (cognitive impairment) the biased assimilation effect.

Other-focus

Individuals exhibit a default egocentric tendency in reasoning and action and place disproportionately more emphasis on their own opinion as opposed to that of others (Keysar and Bly 1995). This is mainly due to the fact that self-relevant information is more salient and readily available to consumers than other-relevant information (Ross and Sicoly 1979). This focus on the self rather than on others leads individuals to exhibit self-promoting behavior, such as claiming credit for others' efforts (Caruso, Epley and Bazerman 2006), planning a dream vacation instead of engaging in charitable behavior (Levontin, Ein-Gar and Lee 2015), or showing less willingness to compromise in negotiations (Neale and Bazerman 1983). However, the default level of egocentricity can be reduced by actively considering others' perspectives. More specifically, inducing other-focus in individuals can reduce the reliance on stereotypical information when forming impressions (Galinsky and Moskowitz 2000). Other-focus can for example be triggered by having individuals think about specific others (Barasch & Berger, 2014), or priming individuals with other-related textual cues (Aaker and Lee 2001; Shang, Reed II and Croson 2008).

We propose that inducing other-focus serves as a moderator that reduces biased assimilation of online reviews. As brand attitudes are active representations of stereotypical thoughts in a consumption context (Maison, Greenwald and Bruin 2004), activating other-focus should lead individuals to be less reliant on their own brand attitudes and more open towards the fact that other consumer may have differing opinions of that brand. Individuals who are made aware of the fact that online reviews not only cater to their own beliefs, but are there to help others as well should therefore be receptive towards opposing opinions. In other words, increasing consumers awareness of others' and the benefits that online reviews can have for other consumers should correct overreliance on own beliefs and reduce the strength of the biased assimilation effect.

Some related prior research hints towards this direction. A study by Lord, Lepper, and Preston (1984) suggests that telling individuals to consider an opposite opinion can have a corrective effect on the assimilation bias. When participants had to consider whether they would have made the same evaluation of a research study if the study had represented their own beliefs, participants exhibited a less pronounced bias in attitude-congruent evaluation (Lord, Lepper and Preston 1984). While the results from this research provide an idea that corrective conditions could change the strength of the biased assimilation effect, the induction of the corrective condition pointedly told respondents how to evaluate the stimuli. In an online review context, this means that the review website would have to tell consumers to read reviews that oppose their own opinion as if they were reflective of their own opinion. This would imply to consumers that their own judgment is unreliable and should be augmented by considering opposite positions. More importantly, it is hard to imagine oneself in a negative experience with a product if their own experience and the attitudes resulting from this experience are positive. Therefore, such a prime could rather lead consumers to feel threatened in their decision freedom (Wicklund 1970), possibly leading to reactance (Clee and

Wicklund 1980). Thus, we propose other-focus as a similar, but more subtle and perhaps applicable induction of a corrective prime (Epley, Caruso and Bazerman 2006).

H3: The effect of brand attitude on argument persuasiveness is moderated by other-focus in such a way that for respondents that are more focused on others (vs. themselves) the effect is weaker (stronger).

Cognitive Impairment

In contrast to inducing other-focus, impairing consumers' cognitive capacity while processing review information could increase the biased assimilation effect. In dual process theory, brain activity is in a fluent state between system 1 and system 2 (Stanovich and West 2000). System 1 is characterized by unconscious reasoning, automatic thinking, and fast decisions. Indications for system 2 are conscious reasoning, as well as deliberate and comparatively slow, but logical decision making (Kahnemann 2003). In situations of limited cognitive capacity, individuals rely more on system 1 as it requires less cognitive resources (Evans 2003). As a consequence, evaluative processes are more automatic and less deliberate, resulting on increased reliance on easily accessible informational cues, such as advertisements (Bargh 2002). Therefore, individuals have been found to be more prone to rely on biases and stereotypical information when making inferences about a subject (Devine 1989). Previous research indicated that when respondents' cognitive capacity was impaired, they were less able to thoughtfully process target stimuli (Gilbert, Pelham and Krull 1988). Similarly, impaired cognitive capacity was shown to limit individuals' ability to infer relationship norms from a target stimuli (Tuk et al. 2008). We therefore introduce cognitive impairment as a potential moderator that increases biased assimilation. More specifically, reducing individuals' cognitive capacity by actively impairing the availability of cognitive resources for the evaluative task at hand should lead to a stronger reliance on prior attitudes towards the brand.

Modern consumers often find themselves in situations of high cognitive impairment, for instance when facing challenging tasks, dealing with time pressure, or having to multitask (Moon and Anderson 2013). Especially in the online environment, consumers are often confronted with a variety of potential distractions and tasks at hand (e.g. other websites, Facebook, E-mail) and operate with multiple devices while surfing online (e.g. mobile phone, tablet, notebook). As a consequence, the occurrence of a situation where consumers operate under some degree of cognitive impairment is much more likely to be the norm than the exception. In the context of online reviews, we believe individuals that are more impaired to exhibit more bias when judging the persuasiveness of opposing online reviews.

H4: The effect of brand attitude on argument persuasiveness is moderated by cognitive impairment in such a way that for respondents where cognitive impairment is high (vs. low) the effect is stronger (weaker).

7. Study 3a: The Effect of Other-focus on Biased Assimilation

Method and Procedure

Study 3a uses a brand from a different industry (clothing) that frequently polarizes consumer opinions, namely *Abercrombie & Fitch* (Barone 2013; Joseph 2013). *Abercrombie & Fitch* is especially well-known for its reputation as a brand that is popular among the “cool kids” but actively discourages plus-sized women from buying their products (Lutz 2013). This has led to the brand receiving controversial press and the development of a strongly polarized public image. Similar to *McDonald's*, the pretest results indicated that attitudes towards *Abercrombie & Fitch* displayed suitable properties for our research objective ($\partial_{Abercrombie}^2 = 3.34, sd = 1.83$). In order to identify suitable online review texts, we again modified and adapted authentic *Abercrombie & Fitch* reviews from different online review websites (e.g., *yelp.com*, *tripadvisor.com*, *consumeraffairs.com*). We pretested eight (four positive, four negative) online review texts with 32 Amazon Mechanical Turk users who evaluated the

reviews in terms of valence (-3= very negative; +3= very positive) and perceived realism (1= not at all realistic; 7= very realistic). Based on these evaluations, we chose two online reviews (one positive, one negative) that displayed clear results on these two measures ($M_{Real_{pos}} = 5.50$, $sd = 1.23$, $M_{Real_{neg}} = 5.14$, $sd = 1.35$), and ($M_{Val_{pos}} = 2.43$, $sd = .75$, $M_{Val_{neg}} = -2.36$, $sd = .84$).

The experimental study was carried out with $N = 131$ ($M_{age} = 37.6$, 63% female) respondents recruited through Amazon's Mechanical Turk. The experimental procedure was as follows: First, respondents indicated their brand attitude towards *Abercrombie & Fitch*. Second, we manipulated self-focus vs. other-focus following Shang, Reed II, and Croson (2008), by asking the respondents to participate in a seemingly unrelated reading task. The reading task comprised a paragraph from a short article about online reviews, which focused on the general importance of online reviews for oneself (vs. other consumers). A detailed description of both versions of the article can be found in appendix C. Next, participants rated four manipulation check items on a scale from 1 (not at all) to 7 (a lot), namely "*your thoughts were focused on just you*", "*your thoughts about the paragraph were focused on just yourself*", "*your thoughts were focused on others*", and "*your thoughts about the paragraph were focused on other review readers*" (Shang, Reed II and Croson 2008). The first two items were recoded and all four items were averaged to form an other-focus index ($\alpha = .74$).

The remaining setup of the experiment was identical to that of Study 2. Respondents were exposed to the two online reviews, rated them in terms of perceived argument persuasiveness (Munro et al. 2002), indicated their purchase intentions (Bergkvist and Rossiter 2009), and WOM intentions (Brown et al. 2005), followed by demographic variables and a suspicion probe. The online reviews used can be found in appendix A. The purchase intention item and the two items measuring WOM intentions were again averaged to form a behavioral intentions index ($\alpha = .97$). Furthermore, perceived persuasiveness of the review set

was again operationalized as the difference between persuasiveness ratings for the positive and negative review, resulting in a new variable, Δ Persuasiveness.

Results

The manipulation check revealed that respondents who were exposed to the paragraph with the other-focus prime indicated they felt more focused on others as opposed to respondents in the self-focus condition ($M_{\text{self}} = 3.8$, $sd = 1.19$; $M_{\text{other}} = 4.5$, $sd = 1.24$. $F(1,130) = 12.85$, $p < .001$). The suspicion probe revealed no evidence that respondents successfully guessed the research objective. To test the proposed effects, we used a first-stage moderated mediation regression model (model 7, Hayes 2013). In a first step, we replicated the results from study 2. As expected, the indirect effect of brand attitude on behavioral intentions through Δ Persuasiveness was significant and different from zero ($b = .15$, 95% CI [.05, .26], $\kappa^2 = .20$). Next, we estimated the full moderated mediation model, where brand attitude (X) was entered as the independent variable, Δ Persuasiveness was entered as the mediator (M), self- ($W = 0$) vs. other-focus ($W = 1$) was entered as the first-stage moderator, and behavioral intentions was entered as the dependent variable. A bootstrapping procedure with 5000 resamples revealed the expected effects. Figure 4 displays the results. Both brand attitude ($b = .82$, $t = 8.80$, $p < .001$) and the interaction between brand attitude and self- vs. other-focus ($b = -.32$, $t = -2.46$, $p < .05$), but not self- vs. other-focus alone ($b = .18$, $t = .78$, $p = .43$) predicted Δ Persuasiveness. In the outcome model, both Δ Persuasiveness ($b = .19$, $t = 2.95$, $p < .05$) and brand attitude ($b = .75$, $t = 10.89$, $p < .001$) were significant predictors of behavioral intentions. More importantly, the conditional indirect effects of brand attitude on behavioral intentions through Δ Persuasiveness were significant and different from zero at both levels of the moderator ($W = 1$; $b = .09$, 95% CI [.03, .18]; $W = 0$; $b = .16$, 95% CI [.05, .29]). The results suggest that the mediation effect of Δ Persuasiveness is indeed moderated by respondents' other-focus (H3). Specifically, the biased assimilation effect was stronger for individuals who

were primed with a self-focus as compared to those who were primed with an other-focus, supporting the idea that inducing other-focus in respondents can have a corrective effect on the assimilation bias. When individuals were prompted to think more in terms of what is beneficial for others and to consider that information catering to others needs is also important, they were more likely to perceive positive and negative reviews as equally persuasive.

[Insert Figure A.4 here]

8. Study 3b: The Effect of Cognitive Impairment on Biased Assimilation

Method and Procedure

The experimental setup was identical to that of study 3a with the exception of manipulating cognitive impairment instead of other- vs. self-focus. $N = 124$ ($M_{age} = 37.1$, 42% male) respondents recruited through Amazon's Mechanical Turk took part in the study. After the initial set of questions about respondents' attitude towards *Abercrombie & Fitch*, we manipulated cognitive capacity following the procedure described by Tuk et al. (2009). Prior to online review evaluation, we asked respondents to remember either ten digits (impaired cognitive capacity) or two digits (full cognitive capacity) until asked to report them. Respondents were instructed to keep the digits in mind during the evaluation of the online reviews. At the end of the survey, we asked respondents to recall the digits. A detailed overview of the setup can be found in appendix C. Next, participants indicated whether they felt that they could pay less attention to the scenario due to the remembrance task on a 7-point scale (1= not at all, 7= very much). The manipulation check showed that participants in the full cognitive capacity condition felt that their attention was less impaired when evaluating the online reviews ($M = 1.93$, $sd = 1.51$) than participants in the impaired capacity condition ($M = 3.04$, $sd = 2.0$), $F(1,122) = 11.90$, $p = .001$. Again, the suspicion probe revealed no signs of suspicion.

In order to assess the potential moderating role of cognitive impairment, we again estimated a moderated mediation model using a bootstrapping procedure (Hayes, 2013). As cognitive impairment should alter the nature of the biased relationship between brand attitude and perceived persuasiveness, we expect cognitive impairment to work as a first-stage moderator (model 7, Hayes 2013). Our model therefore estimates the indirect effect of brand attitude (X) on behavioral intentions (Y) through Δ Persuasiveness (M), moderated by cognitive impairment (W; 0=low impairment, 1=high impairment). Results support the notion that the biased assimilation effect becomes stronger in situations of high (vs. low) cognitive impairment (see figure 5). Specifically, we find a significant positive interaction effect between brand attitude and cognitive impairment (0=low impairment, 1=high impairment) on Δ Persuasiveness ($b = .44$, $t = 3.02$, $p < .01$). Low vs. high impairment by itself did not have a significant effect on Δ Persuasiveness ($b = .10$, $t = .39$, $p > .5$). We find significant conditional indirect effects at both levels of the moderator. When individuals are cognitively impaired, the indirect impact of prior brand attitude on behavioral intentions is stronger ($W = 1$; $b = .12$, 95% CI [.02; .23] as compared to situations in which cognitive impairment is low ($W = 0$; $b = .05$, 95% CI [.01; .14]. In other words, individuals seem even more prone to evaluate belief-confirming online reviews as persuasive and disregard belief-disconfirming reviews as non-persuasive when their mental capacity is impaired (H4). The biased perception again transfers onto behavioral intentions.

[Insert Figure A.5 here]

9. General Discussion

Across four studies, using two different brands and varying combinations of online reviews, we show how brand attitude can bias consumers' evaluation of brand-related online consumer reviews. In study 1, we find that individuals with negative brand attitude (arguably "opponents" of the brand) seem to discount arguments of positive online reviews and perceive

negative online reviews as more persuasive. Individuals with positive brand attitude (“proponents” of the brand), however, show exactly the opposite behavior and rate confirming arguments, namely positive online reviews, as more persuasive than negative ones. This difference is due to a biased assimilation effect, as positive (negative) online reviews confirm the prior beliefs of customers with positive (negative) levels of brand attitude. Due to their strong opinion of the brand, consumers on the extreme poles of the brand attitude continuum are more inclined to defend their prior position towards that brand and consequently judge belief-confirming information as more persuasive, while discounting reviews that oppose their beliefs. The results from the mediation analysis indicate that this initial processing bias translates to behavioral intentions. More specifically, the effect of brand attitude on behavioral intentions is positively mediated through argument persuasiveness for positive brand attitude and positive online reviews. For negative online reviews, the effect of brand attitude is negatively mediated through argument persuasiveness. In sum, the results from study 1 indicate that biased processing of positive and negative reviews mediates the effect of consumers’ prior disposition toward the brand on subsequent behavioral intentions. In study 2 we test whether these effects remain present in situations where consumers are confronted with ambiguous information, namely, positive and negative reviews. Our results find strong support for the findings from study 1 and reveal a similar biased assimilation effect. We also find a similar mediation effect of argument persuasiveness on the relationship between brand attitude and behavioral intentions. In study 3, we identify two moderators to this effect that serve to reduce (study 3a) or increase (study 3b) the strength of this bias. For participants who were primed with an other-focus to reduce their default egocentricity the assimilation bias is significantly lower as compared to those participants who were primed with a self-focus (study 3a). Conversely, impairing participants’ cognitive capacity through a remembrance task increased the strength of the assimilation bias (study 3b). By introducing these two

moderators, we add novel insights to biased assimilation theory and enhance the understanding of the boundary conditions under which this effect operates.

Our paper makes several contributions. First, we add to the literature on eWOM and online reviews. Our findings provide a new perspective on the results of Ho-Dac, Carson and Moore (2013), who found that online reviews have little impact on strong brands. We show that more fine-grained insights can be obtained when looking at strong brands that polarize consumer opinions. Whether these type of brands are influenced by reviews is dependent on the prevalent level of brand attitude and whether the review information opposes these attitudes or not. Brand opponents seem to focus on negative online reviews, whereas brand proponents turn to positive online reviews. In sum, our findings indicate that while eWOM is often praised for being a neutral and unbiased information source it is not regarded in a neutral way but in light of existing predispositions. Therewith, our research contributes to the recent call for research on (e)WOM behavior of dispersed consumer populations (Luo, Raithel and Wiles 2013). Our results indicate that it is important to gather a more detailed understanding of differential information processing, depending on consumers prior dispositions towards a brand. In addition, we are able to show that simply looking at ambiguous sets of information from online reviews as having no influence on consumer decision making could be insufficient (Purnawirawan, De Pelsmacker and Dens 2012). Prior research has argued that this type of review combination gives the consumer no clear recommendation for decision making. Our results show that these results may be due to inherent heterogeneity in consumer attitudes which leads to a cancellation effect (Chakravarti, Mitchell and Staelin 1979) in terms of behavioral intentions or online review evaluations. The presence of a biased assimilation effect of pronounced consumer attitudes on information processing is an interesting insight into some potential consequences that such attitudes have

on consumers' cognition, especially with regard to information sets that lack consistency (Rucker et al. 2014).

Second, we add to the theoretical understanding of the biased assimilation effect. More specifically, we find further evidence that this effect is not only present in relation to important societal questions or political opinion, but translates to everyday information processing, such as when consumers deal with online reviews. Even though prior studies using aggregate data sets to study consumer behavior in relation to eWOM (e.g. Ho-Dac, Carson and Moore 2013) have advanced our knowledge about the interplay between new marketing instruments and product performance, such analyses are necessarily restricted to the aggregate level. Understanding the psychological processes and affirming cognitive biases that influence individual-level processing of such information can significantly augment these findings. We further extend the biased assimilation literature by focusing on two specific boundary conditions, which addresses a so far under-researched area of biased assimilation theory. As individuals seem ready to generalize from their attitude to the general performance of a brand and disregard seemingly plausible information, it is important to understand when and if this bias can be influenced (Lord and Taylor 2009). First, we show how the bias can be reduced, potentially aiding consumers in more objective and clear decision making that might lead to better consumption choices (Bargh 2002). Second, we study how everyday conditions of cognitive strain and impairment might aggravate the bias. Investigating cognitive strategies that enable a correction of this bias can be helpful in situations where acting upon own beliefs is potentially harmful (e.g. disregarding important health-related information about one's favorite restaurant). On the other hand, increasing consumers' awareness of the effect of cognitive impairment on decision making could help them avoid overly subjective decision making (Speier, Vessey and Valacich 2003), especially in an online setting that is prone to sensory overload and interruptions.

10. Implications and Limitations of This Research

10.1 Managerial Implications

From a managerial perspective, we provide important insights for the management of strong, polarizing brands and the subsequent development of brand communication strategies. In order to ensure brand success in the digital age, firms need to carefully consider the impact of consumer-generated comments on brand-consumer relationships (Gensler et al. 2013). We concentrate on eWOM as a particularly influential information source, which firms increasingly try to manage, for instance through monitoring or incentivizing campaigns (e.g. Schmitt, Skiera and Van den Bulte 2011). First, it is important for firms to realize that when positive as well as negative reviews are available for polarizing brands, exposure to these information sources may drive opponents and proponents further away from each other by reinforcing prior dispositions. As research found competing effects on whether brand polarization is desirable for a firm or not (Luo, Raithel and Wiles 2013), it is necessary to sharpen managers' attention to this issue. The importance of this aspect becomes particularly apparent when considering that high cognitive impairment seems to function as a magnifier of the biased assimilation effect. Situations of high cognitive impairment, for example induced by time pressure or multitasking, represent normality rather than an exception for many modern consumers. When evaluating online reviews, consumer perceptions will therefore not only be biased, but the bias is likely to also be particularly pronounced. In the aim to reduce this kind of bias, companies should strive for easily processable, clear website design that does not put too much cognitive strain on consumers during information search. The use of pop-up windows, advertising banners, and other potentially distracting information can lead consumers to suffer more from biased perception.

Second, our findings suggest that these firms should adopt different strategies, depending on whether they wish to focus on managing and delighting existing customers

(arguably consumers with strong positive brand attitude) or whether they wish to persuade skeptics of the brand and recruit them as new customers (arguably consumers with negative brand attitude). When concentrating on consumers with negative brand attitude, managers should put a primary focus on quick and adequate reactions to negative reviews, which this consumer group perceives as particularly persuasive. When focusing on customers with positive brand attitude, firms need to worry less about negative reviews, and can concentrate on encouraging positive online reviews and, for instance, featuring these opinions on company websites or in advertising campaigns.

In addition, website operators could utilize the moderating role of self vs. other-focus as a tool to mitigate biased assimilation. As the results of study 3a suggest, other-focus primes in form of textual cues (Shang, Reed II and Croson 2008) can reduce biased perceptions of online reviews. Online review platform operators could for example precede exposure to reviews by a short paragraph about how “online reviews on this website aim to serve as a decision aid to all consumers”. Exposure to such a prime should enable a more objective and less biased review experience to platform visitors.

10.2 Limitations and Suggestions for Further Research

Some limitations of our study as well as interesting avenues for future research should be pointed out. First, we only investigate a relatively small number of four online reviews and two brands. While this ensures that respondents are more able to thoroughly process all pieces of information from the experimental design, it is also a relevant drawback of many studies involving online reviews as experimental stimuli (Schlosser 2011). Future research should look at larger online review sets which also show a larger variety in terms of valence (e.g., a dominant number of negative reviews and a smaller number of positive ones). It would also be sensible to examine brands which differ in their degrees of polarization or come from different industries. Furthermore, we argue that online reviews are one of the most relevant

and interesting information sources for examining the phenomenon of biased assimilation. This is due to the ubiquitous presence of online reviews in the web, their availability in positive and negative conditions (as compared to sources like advertising, which are mainly positive in nature) and the decisive managerial relevance. Nevertheless, it could be insightful to examine biased assimilation of brand-related information in other information contexts, such as brand-related press releases or official test reports.

Further studies could also focus on biased assimilation in the offline WOM context and gain insights on whether the magnitude of the bias is moderated by factors like tie strength between WOM sender and receiver or the specific content of the reviews. Such research should also compare how biased assimilation differs between different types of media outlets. Similarly, our research focuses on the informational aspect of online review processing, namely its impact on persuasiveness of a message in interaction with prior attitude towards the topic of that message. While this allows us to distinguish between positive, negative, and mixed sets of information and assess the differences in respondent's assessment of these messages and its effect on subsequent outcome variables, we do not focus on underlying emotional processes connected to the evaluation of review information. For example, it could be argued that negative and positive messages lead to different affective responses (Olsen and Prajescu 2004). While our results seem to suggest that the evaluation of the informational cues is similar for negative and positive information, we have no definitive account of the underlying emotional processes that lead to this evaluation. Related to this issue, future research could further investigate whether the process of interpreting brand-related information in accordance to already existing viewpoints is connected to a wish of defending the brand or rather to defending oneself (Cheng, White and Chaplin 2012). This would shed further light on the underlying rationale that drives the biased assimilation effect. Nevertheless, our results suggest that the existence of a biased assimilation effect is a good

indication that brand attitude could have even stronger irrational consequences for consumer processing of brand-related information as previously thought.

Appendix A. Review Stimuli

Full text of the online review stimuli for studies 1, 2, and 3

Positive version of the online reviews	Negative version of the online reviews
McDonald's is a good choice if you are after a quick snack meal. My family and I have finished the meal with no leftovers, it was so yummy! These were by far the best nuggets, burgers and fries I have had in a long time.	McDonald's is a bad choice if you are after a quick snack meal. My family and I were not able to finish our meal, it was not yummy at all! These were by far the worst nuggets, burgers and fries I have had in a long time.
Really amazing service! I'm always getting exactly what I ordered. The staff are very nice and chat with you in a friendly way. What a treat!	Really awful service! I'm always getting the wrong order. The staff are very rude and don't say a word to you. What a disappointment!
Burger looked and tasted extremely appetizing, fries were hot, and the onion rings were crispy. A very good meal and one that we will repeat. I was quite surprised at how shockingly good the food was.	Burger looked and tasted extremely unappetizing, fries were barely warm, and the onion rings were rubbery. Not a good meal at all and one that we won't repeat. I was quite surprised at how shockingly bad the food was.
Food was yummy, hot and fresh! Staff were polite, delivering service with a smile. I had a good meal here, I wanted something quick and cheap, and the food was very tasty for the amount I had to pay!	Food was disgusting, cold and not fresh! Staff were rude, whatever happened to service with a smile? I had an awful meal here, I wanted something quick and cheap but the food was dull and tasteless for the amount I had to pay!

Sample visual of the positive and negative online review stimuli for study 1 and 2



"Really amazing service. I'm always getting exactly what I ordered. The staff are very nice and chat with you in a friendly way. What a treat!"



"Really awful service. I'm always getting the wrong order. The staff are very rude and don't say a word to you. What a disappointment!"

Full text of the online review stimuli for study 3

Positive online review	Negative online review
Personally, I think that the quality of the clothes' material is superior and worth the money you pay. Their cuts are super stylish. Abercrombie clothing is well designed and looks better than other clothing brands!	I came here during the week to look for some shirts. Their selection was terrible and the whole store was a huge mess. Their new collection was boring. Yet again, the customer service was just awful and could not answer any of my questions. Will not be returning.

Sample visual of the positive and negative online review stimuli for study 3

 I came here during the week to look for some shirts. Their selection was terrible and the whole store was a huge mess. Their new collection was boring. Yet again, the customer service was just awful and could not answer any of my questions. Will not be returning.
 Personally, I think that the quality of the clothes' material is superior and worth the money you pay. Their cuts are super stylish. Abercrombie clothing is well designed and looks better than other clothing brands!

Appendix B. Overview of Measurement Scales

Phrasing of questions and scales used for the reported findings

Brand attitude (Park et al. 2010). Three items measured on a scale ranging from – 3 to +3, $\alpha = .94$

Please indicate the extent to which you view McDonald's as...

Bad versus **good**

Negative versus **positive**

Dislike it versus **like it**

Review valence. One item measured on a scale ranging from -3 (very negative) to +3 (very positive).

How negative or positive is McDonald's being evaluated in this online review?

Perceived argument persuasiveness (Munro et al. 2002). Two items measured on a scale ranging from 1 (not at all) to 7 (very much), $\alpha = .87$.

How strong are the arguments presented in this online review?

How convincing is this online review?

Purchase intention (Bergkvist and Rossiter 2009). One item measured on a scale ranging from 1 (no chance) to 7 (practically certain).

If you were going to go out for a fast food restaurant, how likely would you be to go to McDonald's?

WOM intention (Brown et al. 2005). Two items measured on a scale ranging from 1 (not at all) to 7 (very much).

If a friend was going out to eat, how likely is it that you would recommend McDonald's?

I will recommend McDonald's to my friends and colleagues

Note: Purchase intention and **WOM intention** were combined to form a behavioral intentions measure, $\alpha = .90$.

Suspicion probe

One open-ended question:

Thank you very much for your participation! To conclude our survey, we would like you to shortly state what you believe the purpose of our survey was.

Appendix C. Manipulation and Manipulation Checks for Study 3

Manipulation and Manipulation Checks for Study 3a (self- vs. other-focus)

Manipulation of self- vs. other-focus (adapted from Shang, Reed II, & Croson, 2008)

Self-focus condition:

Please read the following paragraph from an article on online review websites carefully:

"Online review websites have been very helpful to you for a number of past purchase decisions. Websites that include online reviews are actively trying to improve their review systems to suit your personal informational needs and preferences. Online reviews on these websites are selected with specific attention to your previous preferences and take into account what content suits you best. This selection process ensures that online reviews are especially helpful to you."

Other-focus condition:

Please read the following paragraph from an article on online review websites carefully:

"Online review websites have been very helpful to many consumers for a number of past purchase decisions. Websites that include online reviews are actively trying to improve their review systems to suit all consumers' informational needs and preferences. Online reviews on these websites are selected with specific attention to all consumers' previous preferences and take into account what content suits all users best. This selection process ensures that online reviews are helpful to many other consumers and not only to a selected few."

Manipulation check (Shang, Reed II, & Croson, 2008). Four items measured on a scale from 1 (not at all) to 7 (a lot).

Please evaluate the following statements regarding the paragraph you just read.

Your thoughts were focused on just you

Your thoughts about the paragraph were focused on just yourself

Your thoughts were focused on others

Your thoughts about the paragraph were focused on other review readers

Note: The first two items were recoded and all four items were averaged to form an other-focus index ($\alpha = .74$).

Manipulation and Manipulation Checks for Study 3b (high-vs. low cognitive impairment)

Manipulation of high vs. low cognitive impairment (adapted from Tuk et al. 2009).

Before you start evaluating the online reviews, we would like you to participate in a memory task. In this task, we'll show you a series of numbers. The numbers are separated by commas. It is very important that you memorize those numbers and keep them in mind while answering the survey. At the end of the survey, you will be asked to repeat them.

Low cognitive impairment condition: 1, 2

High cognitive impairment condition: 8, 3, 10, 7, 5, 3, 6, 2, 4, 10

Manipulation check (Tuk et al. 2009). One item measured on a scale ranging from 1 (not at all) to 7 (very much).

Did you feel that you could pay less attention to the evaluation of the online reviews due to the remembrance task (memorizing the numbers)?

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Figure A.1 Moderated Mediation Model for Study 1

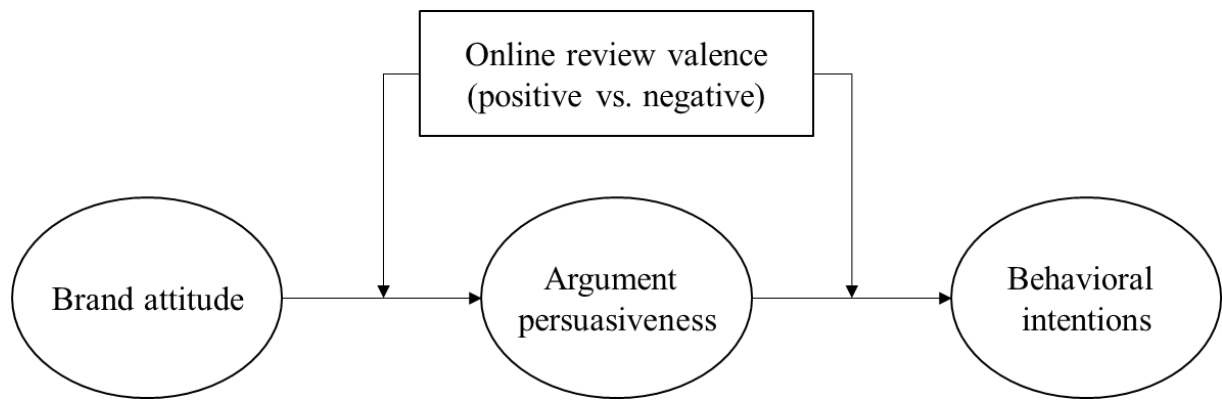


Figure A.2 Brand Attitude and Argument Persuasiveness in Univalent Online Review Conditions.

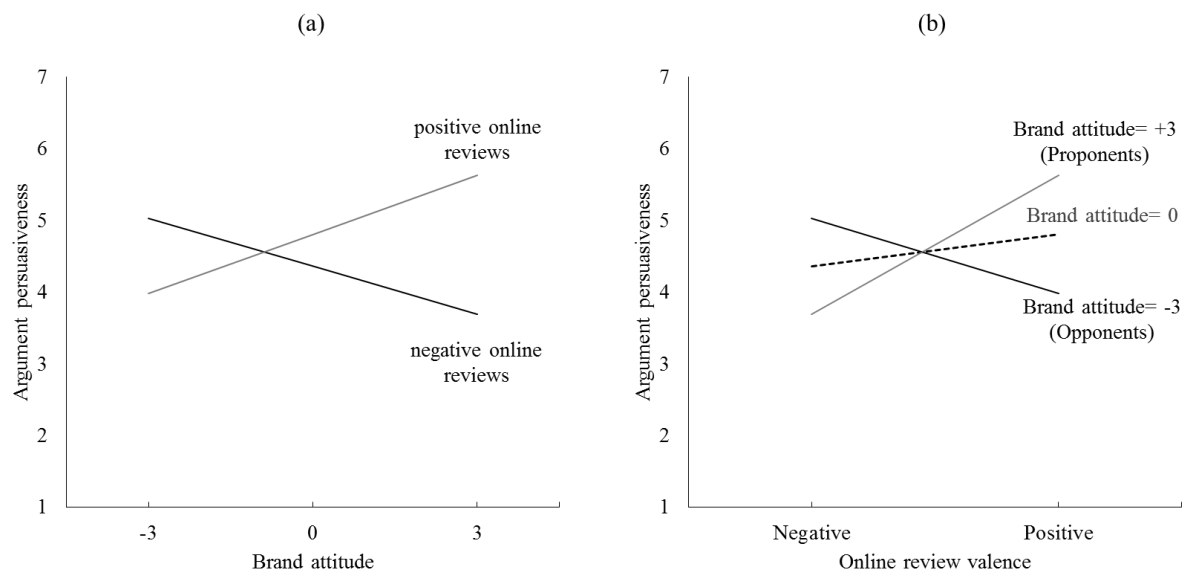


Figure A.3 Mediation Model for Study 2.

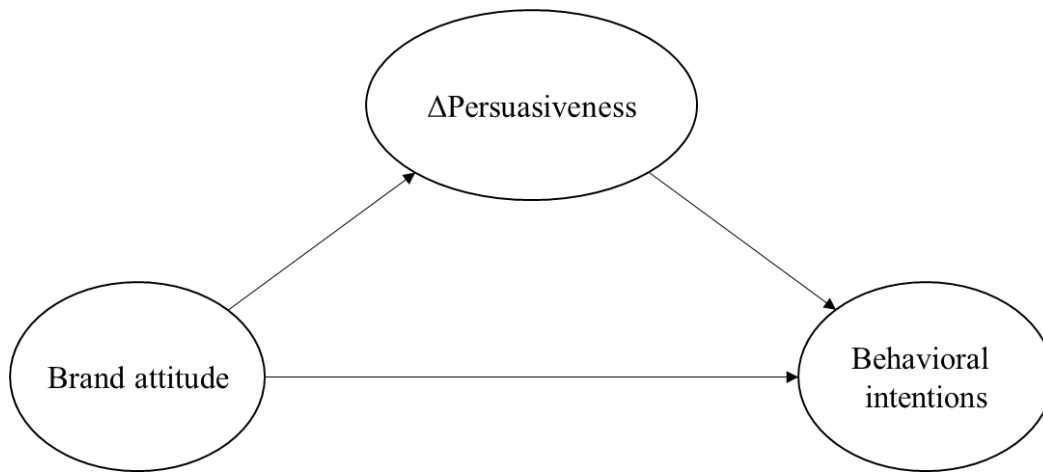


Figure A.4 Moderated Mediation Model for Study 3a.

Indirect Effects: W= 1; b= .09, 95% CI [.03, .18]; W= 0; b= .16, 95% CI [.05, .29]

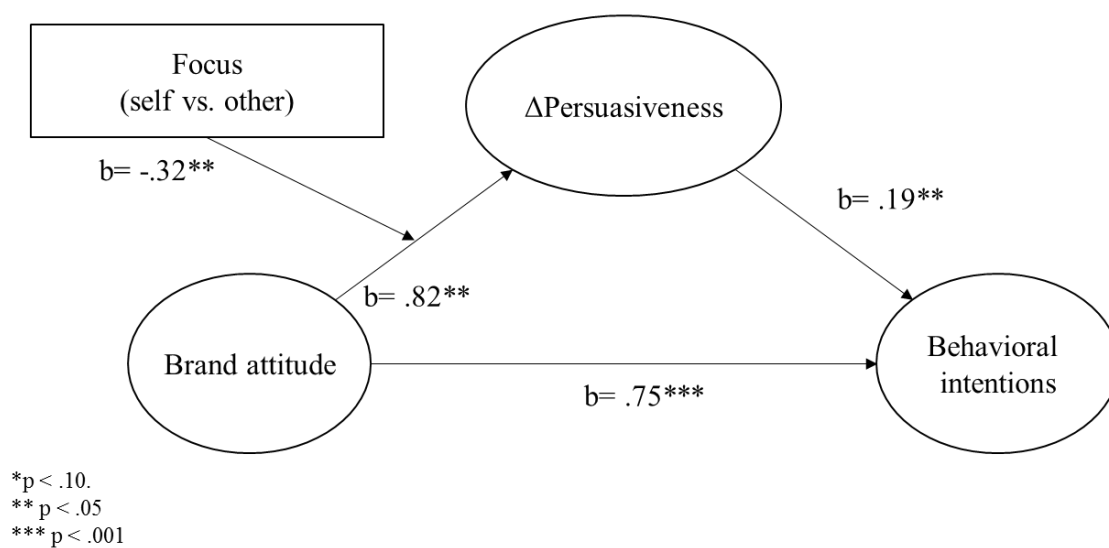


Figure A.5 Moderated Mediation Model for Study 3b.

Indirect Effects: W = 1; b = .12, 95% CI [.02; .23]; W = 0; b = .05, 95% CI [.01; .14]

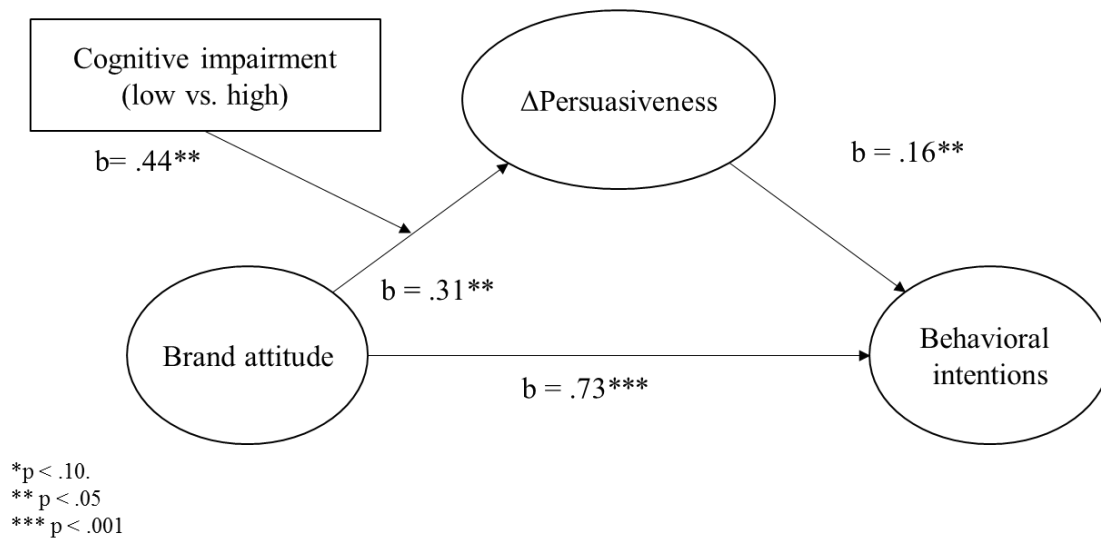


Table A. Results for Study 1.

		Argument persuasiveness		Behavioral intentions	
		b	t	b	t
X	Brand attitude	.026 ^{n.s.}	.764	.707 ^{***}	24.171
W	Online review valence (neg.= -1, pos.= 1)	.221 ^{***}	3.812	.072 ^{n.s.}	-1.018
X×W	Brand attitude × online review valence	.248 ^{***}	7.238		
M	Argument persuasiveness			.045 ^{n.s.}	1.318
M×W	Argument persuasiveness × online review valence			.238 ^{***}	6.690
R ²			.14		.60
<i>Conditional indirect effects at valence</i>					
<i>Bootstrap 95% confidence intervals for conditional indirect effect – bias corrected and accelerated (BCa)</i>					
				CI-lower	CI-upper
W	-1	.043		.018	.080
W	1	.078		.041	.127

Note: ***p<.01; X= independent variable, W= moderator, M= mediator

