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INTROVERSION AND ONLINE WORD-OF-MOUTH BEHAVIOR: WHAT ROLES
DO REVIEW WEBSITE DESIGN AND PRODUCT DESIGN PLAY?

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LINGNAN UNIVERSITY

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INTROVERSION AND ONLINE WORD-OF-MOUTH BEHAVIOR: WHAT ROLES
DO REVIEW WEBSITE DESIGN AND PRODUCT DESIGN PLAY?

by
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A thesis
submitted in partial fulfillment
of the requirements for the Degree of
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Lingnan University

2020

ABSTRACT

Introversion and Online Word-of-Mouth Behavior: What Roles
Do Review Website Design and Product Design Play?

by

LAU Shu Ting

Master of Philosophy

This research investigates the online review behavior of introverted customers. Introversion is a major personality trait that has been widely discussed in many personality theories. This thesis includes two essays. Essay 1 investigates how the design of an online review website can affect the willingness to do an online review of introverts. Based on the arousal theory, it is hypothesized that introverted consumers, because of their avoidance of arousal, would have a higher willingness to do online review in an environment where other users' feedback is not allowed, but this design does not affect extroverts. These predictions are confirmed by our results. Essay 2 investigates how introverts' WOM behavior responds to anthropomorphized products differently from extroverts. It is hypothesized that since introverts possess less anthropocentric knowledge and are less motivated to engage in social interaction, they are also less likely to anthropomorphize inanimate objects than extroverts, and this difference could exert an influence on their WOM behavior for an anthropomorphized product. Specifically, our results show that introverts could not tell the difference between an anthropomorphized and non-anthropomorphized product, and their willingness to engage in online WOM, unlike extroverts, is not raised by the anthropomorphism design.

DECLARATION

      I declare that this is an original work based primarily on my own research, and I warrant that all citations of previous research, published or unpublished, have been duly acknowledged.

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(LAU Shu Ting)

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CERTIFICATE OF APPROVAL OF THESIS

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Master of Philosophy

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Chapter

Introduction

The internet is a popular vehicle for word-of-mouth (WOM) communications and WOM has dramatically shaped the way we make purchase decisions. As a matter of fact, reading online reviews have become a crucial part of many people's shopping routine. Surveys showed that 92% of U.S. consumers read online reviews of local businesses (BrightLocal, 2015), 88% trust online reviews as much as personal recommendations, and 60% say negative reviews make them not want to use a business (BrightLocal, 2016). Knowing how much of a game-changer online reviews could be for doing business, many companies not only embrace online reviews but also attract them actively with different strategies. For example, Amazon would invite customers to write reviews via emails. Instagram and Spotify would send a notification to ask users to rate their app. Openrice incentivizes members to submit more restaurant reviews to reach higher membership levels.

Considering that online reviews play a powerful role in modern day marketing, numerous of research has already investigated the online WOM topic and tries to learn more about it. Previous literature has studied *why* people post; the motivation to help other consumers, to vent or to engage in social interactions, etc. (Sundaram, et al., 1998; Cheung and Lee, 2012; Gregoire & Fisher, 2008; Hennig-Thurau, 2004; McWilliam, 2000), *what* people post; information about the company, feelings or evaluations of the product (Hennig-Thurau, 2004; Chen et al., 2011), *where* people post; leading retail sites like Amazon.com (Chevalier & Mayzlin, 2006) or brand-general and brand-specific forums (Chen & Kirmani, 2015), and *how* online reviews affect other consumers; for instance, how positive ratings could increase purchase intentions and the growth of product sales (Park & Lee, 2009).

Nevertheless, we discover a literature gap when reviewing literature that studies "*Who*" are posting online. Existing online WOM literature does point out that opinion leaders and market mavens are more likely to share their reviews (Li & Du, 2011; Ho & Dempsey, 2010). However, firstly, these groups of reviewers, the opinion leaders and market mavens, are very different from general consumers, so their behaviors do not speak for the whole consumer population. And secondly, opinion leaders and market mavens are given these titles partially because of their active posting style. So, in a way, literature is saying that these groups of people that post more, post more. In addition, although some researchers have studied the relationship between different personalities, including introversion, and WOM. However, since they examine many personalities, thus the attention each personality receives is relatively unfocused. For instance, Hennig-Thurau and his colleagues (2004) study how motivations differ across consumers with different personality traits. But for introversion, they simply indicate that introverts, compared to extroverts, are less likely to engage in WOM behavior, without any further explanation and proposition of mechanism. Furthermore, some other researchers have studied trait introversion and WOM. But they focus on the WOM-receiving angle rather than the WOM-generating angle. For example, Moordian and Swan (2006) conclude that introverts, compared to extroverts, have a smaller reliance on WOM. Therefore, knowledge about how personalities and individual differences are related to online WOM is still yet to be expanded. As a result, we deem it helpful to consider a trait factor that actually helps us understand the psychology behind posting behavior of general consumers. We suggest investigating how individual personalities could play a role in the review posting context, so that we can learn

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how to design different effective marketing strategies to accommodate consumers of different personality traits, and, thus, manage and predict future WOM behavior in a more effective and efficient manner.

Among many personality traits, we have chosen introversion to be our focal point of the thesis, since introversion is a strong personality dimension across cultures that could highly impact consumer behavior (Lucas et al., 2000). Moreover, we think this particular trait has a lot to do with WOM behavior specifically because of its tendency to avoid external stimulations, which leads to them being less sociable. Indeed, in the big five model, introversion is not the only one trait that is partially defined by a person's level of social activity (Costa & McCrae, 1992). The trait "Openness" could also affect a person's level of social activity, since a higher level of openness motivates a person to seek after a variety of experiences, which include social experiences. Nonetheless, we have chosen trait introversion over openness mainly because over the past few years, the topic "Introversion" has started to become the focus of many researchers, scholars and writers. And we would like to build on the foundation they constructed to further our knowledge on this particular trait.

Overall, on the basis of the introversion/ extroversion dimension of personality theories (Jung, 1921; Eysenck, 1967; Costa & McCrae, 1992), and recent research that explores the relationship between trait introversion and online behavior (Ross et al 2006; Ryan & Xenos 2011), our research intends to comprehend how introverted consumers' WOM behavior would change in response to different review website designs and product designs.

We divide the thesis into two essays. Essay 1 investigates how the design of a review website affects introverts' WOM behavior. Many popular online review platforms provide a review feedback system where other users could give feedback to the original posters. However, a website allowing feedback on consumers' review might not be the best for introverted posters, because of the concern of social interaction. In particular, essay 1 suggests that as introverts tend to be worried about and disfavor external stimulations like social interactions, which are the results of them being chronically over-aroused (John & Srivastava, 1999; Weber, 1998). If introverted posters are aware of the possibility of receiving feedbacks on their reviews, they are likely to refrain from posting their own review.

Essay 2 examines the downstream effect anthropomorphism has on introverts' WOM behavior. While prior literature has found positive evidence for anthropomorphizing products, we suggest that introverts' willingness to review products would not be higher for an anthropomorphized product than a non-anthropomorphized product. There are two plausible reasons for this prediction. Firstly, as introverts tend to avoid social interactions, they would possess less knowledge about human or other social agents. Consequently, they would fail to recognize the human features in an anthropomorphized product. Secondly, when a product becomes human-like, it also becomes a social agent that one could interact with. Given that WOM is essentially an interactive experience with the brand/ product, and that introverts tend to avoid social interaction, introverts would refrain from doing reviews for an anthropomorphized product.

This research makes four major contributions. Firstly, there is an obvious gap in the literature on the topic of how individual differences and online WOM are

connected. Prior literature in WOM generally ignores individual traits as an underlying posting motivation. Even though there is a scarce amount of WOM research that does include personalities as variables, their results and arguments are weak. Thus, this study aims to contribute through filling the literature gap by examining the review behavior of introverts.

In addition, there is little existing online WOM literature investigating how website designs affect consumers' willingness to post their reviews. Yet, essay 1 focuses on the design of review feedback to find certain effects, suggesting that this is a topic worth investigating. We contribute to the WOM literature by exploring a new aspect of future study.

Our research also contributes to the literature on anthropomorphism and individual differences. Although previous literature has studied how anthropomorphized products are more preferred when consumers feel socially excluded (Wan et al., 2017), the state of social exclusion could be unstable and change. Therefore, we have decided to incorporate personality traits into the anthropomorphism literature because they have a high level of stability (McCrae & Costa, 1994; Cobb-Clark & Schurer, 2012). This could help bringing in a consistent predictor of anthropomorphism into the literature.

Finally, on the practical side, our research can help marketers factor in introverted customers when planning their business strategies and doing market analysis, specifically the ones that involve online WOM. Catering to introverted customers' need is especially important as introverts account for half of the U.S. population (Myers et al., 1998). Imagine how great the benefit could be if this market sector is properly appealed to, and how wasteful it would be to omit a population this

size. Besides, if a person's online WOM behavior is significantly affected by her being an introvert or not, then any analysis on online reviews without taking into consideration this factor may lead to bias.

Moreover, our tested theories, which are rather counter-intuitive, are very applicable in the marketing world. Our theory in essay 1 proposes how adding the feedback option on a review website could backfire. It would be common to assume that in the WOM context, the more opportunity given people to talk, the more conversations or voices there would be. But our theory and results suggest otherwise, which means that consumers overall prefer a review website design that does not allow feedback. And our theory in essay 2 proposes that the adoption of anthropomorphism is less effective to introverted consumers. In real life, many marketers adopt the anthropomorphism strategy assuming the strategy works for everyone and disregard the individual differences of their target market (Aggarwal & McGill, 2007). Yet, our results suggest approaching both introverted and extroverted consumers with anthropomorphism may not be a smart move.

In the next section, we would first discuss the key theories to both essay 1 and 2.

Introverts in The Literature

(1) Introverts

When going through the literature of introversion, two theories would often encounter are The Introversion Theory by Carl Jung (1921) and the Five Factor Model of Personalities by Costa and McCrae (1992). Carl Jung defined introverts as people with an internal focus and extroverts as people with an external focus. Introverts orientate their energy and thoughts to their inner self and extroverts

orientate theirs to the outside world. Jung suggested that an introverted mind places a subjective view, which stems from her experience and feelings, between the world and herself, but an extrovert perceives the world outside herself as it is. Next, in the Five Factor Model of Personalities, introversion is listed alongside four other traits, neuroticism, agreeableness, openness, and conscientiousness, as one of the Big Five Personalities (Costa & McCrae, 1992). Costa and McCrae give a more practical definition and description of introversion by describing introverts as less sociable, energetic, adventurous and outgoing.

(2) Arousal and Introversion

Apart from the definitions of introversion discussed above, there is one key theory to our research, The Arousal Theory by Eysenck (1967). Eysenck looks at trait introversion from a biological point of view and concludes that introversion relates to an individual's optimum level of cortical arousal. According to Eysenck, activities in the ascending reticular activating system (ARAS) in our brain would lead to a higher cortical arousal via stimulating the cerebral cortex. Importantly, compared to extroverts, introverts inherently have higher levels of ARAS activity and are thus chronically over-aroused. Consequently, extra simulations such as social interaction could push them beyond their optimum level of arousal. This is why introverts tend to avoid stimulations from the outside world, such as visual, auditory stimulations or even social stimulations (Eysenck, 1967; Stelmack et al., 1977; Stehnack et al., 1979; Geen, 1984). Conversely, extroverts inherently have lower levels of ARAS activity and therefore are chronically under-aroused. Hence, they constantly need to seek more external stimulations in order to reach the optimum level of arousal.

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(3) Introversion in Real Life

According to Arousal Theory (Eysenck, 1967), people's behavior in real life is highly affected by their level of introversion. Specifically, arousal levels affect introverts' engagement in social activities and make them less sociable. Since social interactions, such as making people laugh, presenting and exhibiting oneself, and being the center of attention, could heighten one's arousal level, consequently, introverts are low in need for social interactions. Moreover, Thorne's study (1987), which breaks down the conversational styles of introverts and extroverts with strangers, discovers that introverts prefer to recourse to the role of an interviewer, which receives less attention and requires fewer expressions of their own interests and concerns, during the conversation. Similarly, other research shows that introverts prefer a quiet, remote, and secluded environment (Weber, 1998; Oishi et al., 2015). On the contrary, extroverts have high needs for a socially active lifestyle and are comfortable having much attention (McCabe & Fleeson, 2012; Costa & McCrae, 1988; Costa & McCrae, 1992; John & Srivastava, 1999). And they prefer some place that is open, noisy, and promotes visibility and interactions with people (Weber, 1998; Oishi et al., 2015).

Yet, people might assume that an introvert in the offline context may behave differently when they are on the Internet, as the virtual space could provide potential comfort because of the lack of physical presence of other parties and offer them a greater readiness before sending out online messages (Blau & Barak, 2012). But results across different research show that even though some introverts' traits are balanced out in the online world, meaning that their behavior is less introverted online, introverts still act significantly more restrained and reserved compared to

extroverts (Baggio 2016; Amichai-Hamburger, Wainapel, & Fox, 2002; McKenna & Bargh, 2000). For example, when using social media sites like Facebook, introverts engage less in self-presentational activities than extroverts. Similarly, introverts upload photos, update status, comments, click "like" and "share" less often than extroverts (Seidman, 2013; Lee et al, 2014). Even when they do upload photos, the photos tend to be less "experimental" (e.g., photos without any filters or editing) (Krämer & Winter, 2008). Finally, introverts also have fewer friends and join less groups on Facebook than extroverts (Amichai-Hamburger and Vinitzky, 2010).

Although personality traits are not fixed completely (McCrae and Costa, 1994; Ardelt, 2000), for example, a person could act more introverted when talking with strangers but less so when with friends, they are rather stable. More importantly, introversion is found to be a highly stable and chronic trait (Orth, 2017; Verweij et al, 2016)

Essay 1

Introversion and Online WOM: When Restricting Feedback Leads to More Feedback

(1) Introverts and negative stimuli

In this part we discuss another introversion theory that is very important to essay 1: The Passive Avoidance Learning theory (Newman and Nathan, 1985). This theory suggests that introverts and extroverts are sensitive to different types of stimuli; Introverts are more sensitive to negative stimuli, and they would engage in response inhibition when they receive punishment feedback. In real life, they would act in a more inhibited manner in order to avoid negative stimuli like punishment, threats, social rejection and social embarrassment. It would take them longer to react

and respond after receiving negative feedback. However, introverts are less likely to be motivated by positive stimuli like rewards. On the contrary, extroverts are responsive to rewards and are motivated to get them, but are less affected by negative stimuli (Gray, 1987; Derryberry & Reed 1994).

Hypotheses development

As discussed before, introverts generally avoid social interactions including self-presentational activities because such activities make them over-aroused. According to Chen et al (2011), the act of posting review is publicizing your personal evaluations of purchased products. Thus, this definition implies that review posting is also a type of self-presentational activities, as the consumer needs to express their opinion to the online world. Therefore, we predict that introverts would be less willing to post review than extroverts.

> *H1: Introverts are less willing to post their review compared to*
>
> *extroverts.*

The second hypothesis focuses on the design of the review website. Specifically, we predict that introverts would prefer a website with a design that does not allow other users to give feedback to review posters to a design that does allow feedback. There are two possible explanations for this phenomenon. The first is the sociability account suggested by The Arousal Theory; When introverted customers see that other users could give feedback to the review they post, they see potential social interactions. As a result, this discourages them to post. The second explanation is the sensitivity account suggested by The Passive Avoidance Learning Theory. According to this theory, introverts are sensitive to negative stimuli. Thus, it is possible that introverts are only afraid of the negative feedback they might get, for

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instance, the comments that disagree with or even make fun of their own review, but they are not afraid of other types of feedback, for instance, some neutral or positive feedback. But either way, both routes lead us to the second hypothesis.

> ***H2****: There would be an interaction between introversion and review page design on willingness to post. That is, Introverts' willingness to post their review would be higher when the review website doesn't allow feedback than when it does. However, extroverts' willingness to post would not be affected by the website design.*

Study 1

Participants and Procedure

The goal of this study is to test H1 and H2. We recruited a total of 950 participants on MTurk. They had an average age of 30 years old and were all US residents. 59% of them were male and 41% were female. They were randomly assigned to one of the three review feedback conditions (Positive feedback, negative feedback, no feedback).

Participants were asked to listen to a 3-minute song and to evaluate the song by assigning a rating score and writing a review. After the evaluation, we showed them one of the three versions of screenshot of a review website, which differs in the presentation of review feedback (positive, negative or no feedback), depending on their condition. The website of the no feedback condition consisted of three reviews of a song by three previous posters with no feedback to any of the reviews. For the positive feedback condition, it consisted of identical reviews from the same three posters in the no feedback condition. But this time, feedback was added such that there was one user replying to each of the reviews in a very supportive way

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("Agreed!", "Totally!", etc.). For the website of the negative feedback condition, it also contained the identical reviews from those three posters. And feedback was added such that there was one user replying to each of the reviews but with very unsupportive and sarcastic feedback ("Nononono!", "Like you know how to make your own song", etc.).

Then, participants would have to report their willingness to post their review on the website they were just shown on a 7-point bipolar scale (1 =not willing at all, 7 = extremely willing). Subsequently, we would measure their level of introversion. We measured participants' level of introversion using the Extroversion scale extracted from the Eysenck Personality Inventory (Eysenck, 1964), which is a questionnaire designed to measure four personality traits: extraversion, neuroticism, psychoticism and lie. The 24-item extroversion questionnaire is a self-report measure, requiring a "Yes" or "No" response to each of the statements, some example statements are "I am mostly quiet when I am with other people.", and " I often long for excitement." (see Appendix A for the questionnaire). We classified them into introverts or extroverts with the median split method. The main reason we chose this measurement over the other is because it successfully captures the arousal facet of introverts and extroverts just as the arousal theory describes (Rocklin & Revelle, 1981) Moreover, although the Eysenck Personality Inventory was published in 1964, it is still highly relevant in today's research (Kurtz et al., 2008; Shehata et al., 2015; Prabhakaran et al., 2011; Baryshnikov et al., 2018). Lastly, we would ask for their demographic information.

Results

Manipulation check

First, we checked the adequacy of the manipulation of positive and negative valence in the positive and negative feedback conditions. A 2 (Levels of introversion: Introverts vs. Extroverts) x 2 (Review conditions: Positive feedback vs. Negative feedback) ANOVA was performed on participants' response as to how positive or negative they remembered the feedback to be. The results showed a significant main effect of the review condition such that participants in the positive condition thought the feedback was more positive ($M= 4.93$) than those in the negative condition ($M= 3.74$, $F(1, 647)= 90.88$, $p= .00$). However, the main effect of level of introversion and interaction were also significant, meaning that for the positive feedback and negative feedback conditions, introverts and extroverts had different perceptions of their levels of positive and negative valence. Specifically, extroverts viewed the positive feedback condition as more positive than introverts ($M_{extroverts}=5.30$ vs. $M_{Introverts} = 4.56$, $F(1, 647)= 8.48$, $p= .00$), and they also viewed the negative feedback condition as more positive than introverts ($M_{extroverts}= 4.48$ vs. $M_{Introverts} = 3.01$, $F(1, 647)= 8.48$, $p= .00$).

Feedback vs. No Feedback

To get a preliminary understanding of how introverts and extroverts' willingness to post differ in response to different website designs, we combined the two feedback conditions, the positive and negative feedback conditions, into one "Feedback condition". We then performed a 2 (Levels of introversion: Introverts vs. Extroverts) x 2 (Review conditions: Feedback vs. No feedback) ANOVA. As predicted, the interaction between levels of introversion and review conditions was significant ($F(1, 946)= 4.74$, $p= .03$). The results also showed a significant main effect of introversion, such that participants who were introverted were less willing

to post their review (M= 3.40) than those who were extroverted (M= 4.88; $F(1, 946)$= 119.54, p= .00). And the main effect of review condition was also significant, such that participants in the no feedback condition had a higher willingness to post (M= 4.42) than those in the feedback condition (M= 4.04, $F(1,946)$= 7.68, p= .01).

In order to test the robustness of the effect, we added a covariate to run an ANCOVA analysis. Also, we ran the same ANOVA test using a second classification method: The top-bottom 27%, to re-classify introverts and extroverts using the same set of data.

We then replicated the results with a 2 (Levels of introversion: Introverts vs. Extroverts) x 2 (Review conditions: Feedback vs. No Feedback) ANCOVA and the median split classification method, and the results were of the same trend. The interaction effect was significant ($F(1, 945)$= 4.67, p= .03). The main effect of levels of introversion and review conditions were both significant; Introverts were significantly less willing to post than extroverts ($M_{introverts}$= 3.40, $M_{extroverts}$ =4.88; $F(1, 945)$= 45.19, p= .00), and participants in the no feedback condition were significantly more willing to post than those in the feedback condition ($M_{Feedback}$= 4.04, $M_{No\ Feedback}$= 4.42; $F(1, 945)$= 7.42, p= .01). Last but not least, the covariate of musical expertise was also significant ($F(1, 945)$= 119.24, p= .00), showing that this was an effective covariate.

A 2 (Levels of introversion: Introverts vs. Extroverts) x 2 (Review conditions: Feedback vs. No Feedback) ANOVA also yielded a predicted interaction when the top-bottom 27% method was used ($F(1, 523)$= 7.11, p= .01). The main effect of introversion was also significant, such that introverted participants were less willing to post (M= 3.15) than extroverted participants (M= 5.2, $F(1, 523)$= 115.58,

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p= .00). And the analysis also yielded a main effect of review conditions, such that participants in the no feedback condition (*M*= 4.43) were more willing to post than those in the no feedback condition (*M*= 4.07, *F*(1,523)= 4.26, *p*= .04).

Positive vs. Negative vs. No Feedback

Going back to the original experiment design, a 2 (Levels of introversion: Introverts vs. Extroverts) x 3 (Review conditions: Positive feedback vs. Negative feedback vs. No feedback) ANOVA was executed. The results indicated a marginally significant interaction (*F*(2, 944)= 2.36, *p*= .10). The main effect of levels of introversion was significant, such that introverted participants had a lower willingness to post their review on the review website (*M*= 3.40) than extroverted participants (*M*= 4.88, *F*(1, 944)= 157.48, *p*= .00). And the main effect of review conditions was also significant, such that participants in the no feedback condition had the highest willingness to post (*M*= 4.42), and it was significantly higher than those in the positive feedback (*M*= 4.11) and negative feedback conditions (*M*= 3.97, *F*(2, 944)= 4.28, *p*= .01).

To examine if the results are more aligned with the sociability or the sensitivity explanation, we directly compared introverts' willingness to post in positive vs. negative feedback conditions. We conducted a t-test and found no significant difference between the positive (*M*= 3.29, *SD*= 1.79) and negative feedback conditions (*M*= 3.14, *SD*= 1.97, *t*(326)= .57, *p*= .57). This shows that our data supported the sociability account, because our introverted participants were not more reluctant to post in the negative condition than the positive condition, suggesting they were not particularly afraid of negative stimuli.

Then, a 2 (Levels of introversion: Introverts vs. Extroverts) x 3 (Review conditions: Positive feedback vs. Negative feedback vs. No feedback) ANCOVA was run with musical expertise as a covariate, and median split as the classification method. The interaction was marginally significant ($F(2, 943)= 2.33, p= .10$). The main effects of levels of and review on willingness to post were significant, showing that introverts were less likely to post than extroverts introverts ($M_{Introverts}= 3.40$, $M_{Extroverts} = 4.88; F(1, 943)= 61.56, p= .00$), and participants in the no feedback condition were more likely to post ($M_{Positive}= 4.11, M_{Negative}= 3.97, M_{No\ Feedback}= 4.42$; $F(1,943)= 4.39, p= .01$). Last but not least, the covariate of musical expertise was also significant ($F(1, 943)= 119.53, p= .00$), showing that this was an effective covariate.

Again, we also ran another test using top-bottom 27% to re-classify the data. We ran a 2 (Levels of introversion: Introverts vs. Extroverts) x 3 (Review conditions: Positive feedback vs. Negative feedback vs. No feedback) ANOVA. The interaction was significant ($F(1, 522)= 3.78, p= .02$). And both the main effects of level of introversions and review conditions were significant. Introverted participants were less willing to post their review than extroverts ($M_{Introverts}=3.15, M_{Extroverts} = 5.20$, $F(2, 522)= 161.02, p= .00$). And for the main effect of condition, no feedback condition still remained highest among three feedback conditions ($M_{positive}= 4.13$, $M_{negaitve}= 4.01, M_{No\ feedback}= 4.43, F(2, 522)= 9.40, p= .06$).

Discussion

The results of study 1 offer several important insights. Firstly, the results provide preliminary support for h1: Introverts are less willing to post review than

extroverts, and for h2: Introverts are more willing to post their product review when the website does not allow feedback than when it does. Our results were robust and strong using either of the classification methods, median split or top-bottom 27%, and in the replication where we added musical expertise as a covariate. Overall, our data is in line with the arousal explanation, which suggests that feedback is some external stimulations that introverts seek to avoid.

Nonetheless, our results might make one wonder: if extroverts are such "social butterflies", then why didn't extroverted participants prefer the feedback design, which implied more potential social interactions, to the no feedback design? To answer this, we have come up with two possible explanations.

The first possible explanation is that extroverts might have a different definition of social interactions. According to Sorokin (1928), situations where one party influences the state of mind of the other party can already be defined as a type of social interaction. Hence, extroverted participants could have seen the act of posting alone as a type of social interaction, because they believed they had successfully changed somebody's mind with their review and were completely satisfied by that.

The second possible explanation is that extroverted participants might have found review posting to be very enjoyable and satisfying. They enjoyed the process of sharing their opinion to the world, because such process lets them stand in the spotlight, like a speaker standing on the stage giving a speech and getting all the attention from the audience, and they gained a complete sense of satisfaction through that. These two explanations can help us understand why extroverts did not prefer the feedback to the no feedback design in our study.

However, study 1 has several limitations. First, the manipulation check showed that introverts' perception of the positive condition was merely above the neutral point and lower than we expected (i.e., $M= 4.56$), which may suggest that participants did not think the positive feedback was positive enough. This could be the reason that the difference between their willingness to post in the positive and negative conditions was not significant. Therefore, future studies should address this issue by pretesting stimuli that could lead to more positive perception about the feedback.

Moreover, we could not rule out an alternative explanation to why introverts are less willing to post, which is introverts' lower action tendency. And it is possible that the difference between introverts and extroverts' action tendency could lead to our introverted participants being less willing to do review for the song than extroverted participants. In order to eliminate this possible explanation, future studies could do content analyses of participants' answers. For instance, we could measure participants' review length and the time they spend on writing a review. If introverts and extroverts' input are not different from each other in terms of different measurements, the explanation could be debunked.

Additionally, participants were asked to do a review for a song, which is an uncommon product to do a review for. Therefore, another possible explanation to why introverts were less likely to post their review is that, since introverts tend to act more cautiously in an unfamiliar situation because of their unadventurous nature, our introverted participants also acted in a very cautious way when they were in an uncommon and unfamiliar situation where they were asked to review a song. And this explanation could also account for why the effect was amplified in the feedback

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condition than in the no feedback condition; because introverts were acting even more cautious when they could receive judgement from others. Hence, future studies should replace the music with a more common stimulus, as a song is usually not something consumers do reviews for. So that they could test the real motivation for introverts to be more reluctant to do reviews.

Marketing Implications

First and foremost, our results support that introverted consumers prefer not having feedback when posting their reviews online. Thus, marketers could re-evaluate their choice of review page design if their target market is introverted customers.

Second, it is crucial to acknowledge that overall our data showed a net rise of willingness to post from the feedback design to the no feedback design. Most of the main effects of review conditions across different tests were significant, and the rest were still marginally significant, such that those means in the no feedback design were always higher than the feedback design. This suggests that instead of the popular feedback design that is adopted by many companies, it would be beneficial for marketers to switch to a no feedback design on their review page, which motivates introverts to post but does not affect extroverts' willingness to post.

Essay 2

Introversion and Online WOM: When Anthropomorphism Fails to Work

Anthropomorphism

In this section, we would discuss the anthropomorphism theory and how it is related to introversion and online WOM behavior.

The anthropomorphism theory that serves as the basis of essay 2 is The Three-factor theory of anthropomorphism (Epley et al, 2007). Epley defines anthropomorphism as an inductive presumption by which people, in their mind, fill the real or imagined behavior of other agents with human-like characteristics, minds and motives. In this theory, there are three factors that trigger an anthropomorphism process. They are (1) elicited agent knowledge, (2) effectance motivation and (3) sociality motivation. We categorize the three factors into two groups according to their nature.

The first group is a cognitive group which includes one factor: elicited agent knowledge. It concerns the accessibility and applicability of anthropocentric knowledge, which refers to the application of existing knowledge about humans on non-human agents. Some researchers have studied how elicited agent knowledge affects anthropomorphism. In their study, Eyssel and Kuchenbrandt (2012) found out how the ethnicity of a robot affected participant's feeling of closeness to it. Researchers manipulated the ethnicity of robots through their names (German vs. Turkish name) and locations of production (Germany vs. Turkey). After being presented with the robots, participants who were all German had to rate how psychologically close they felt to the robots. Results showed that participants felt closer to the German robots but less close to the Turkish ones. A similar research was done by Kuchenbradt and his colleagues (2014). Their purpose was to find out how gender affected perceived suitability for different tasks for robots. In their studies, there were robots that either had a masculine or feminine name and voice.

Results showed that participants generally felt that the female robot was most suitable for stereotypically female tasks, like sewing. And the male robot was most suitable for stereotypically male tasks, like tools sorting. Both research showed that participants applied their knowledge about human beings which they gain throughout the years, like gender stereotypes, common names in their country, etc. to robots, suggesting that people would employ their agent knowledge on anthropomorphized objects.

Then, the second group of factors is the motivational factors. It includes the sociality motivation and effectance motivation. The sociality motivation is a motivational determinant that refers to the desire for social affiliation Social affiliation describes a person's longing to belong to and get involved in a social community or group (Koestner and McClelland, 1992). Prior research demonstrated the sociality motivation can cause anthropomorphism. One study (Chen et al, 2017) demonstrated that participants who were induced to feel lonely, with a cyber game or a social networking site where they were ignored, were more likely to anthropomorphize a brand or product. Another study (McConnell et al, 2011) showed that after participants went through the loneliness manipulation, by writing about a time when they were rejected and felt lonely, they were more likely to anthropomorphize their pets and see them as humans. Also, several studies showed that lonely and socially excluded people are more likely to see an anthropomorphized brand or pet as a companion to avoid feeling lonely (Wan et al, 2015; Epley, 2007). These results suggested that those who lack and are in higher need of social affiliation are more likely to anthropomorphize.

The next and last motivational factor, the effectance motivation refers to the motivation to be in control in an environment. According to Epley, unlike human beings, inanimate objects do not act on reasons, thus, there is no "understanding" why they do what they do. For people with a higher motivation to be in control in their situation, it could be upsetting because there is no way to understand and predict the non-human agent's actions. Therefore, their desire to increase the certainty about the non-human agent and make sense of the agents' behavior eventually triggers the anthropomorphism process. When inanimate objects become human, they can finally interpret those objects' behavior with their own human ways of thinking. Previous literature has also demonstrated how effectance motivation leads to anthropomorphism. In their study, Waytz and his colleagues (2010) induced participants' need to be in control in an environment by emphasizing the unpredictability of an electronic product and by monetary incentives. For participants that were in the effectance motivation: High condition, they were more likely to anthropomorphize the electronic product than those in the effectance motivation: Low condition. This showed that when people are motivated to be in control in an environment, they are more likely to anthropomorphize.

After reviewing the literature above we notice that no one has mentioned the role individual differences play in the process of anthropomorphizing an object and the outcome of that. Therefore, essay 2 bears the purpose to study how individual differences (i.e. introversion) can strengthen or undermine the performance of the anthropomorphism strategy, and how individual differences can affect a consumer's WOM behavior with an anthropomorphized brand/ product. We deem individual differences highly relevant to this topic because they affect people's agent

knowledge, effectance and sociality motivation, which are the three factors in the anthropomorphism theory. For example, for someone who is more friendly and outgoing, she is more likely to gain agent knowledge because of being more experienced in human contact, and therefore, possess more elicited agent knowledge, And for someone who enjoys being the center of attention, she is more likely to seek opportunities to social affiliate with people, and therefore, has a stronger sociality motivation.

Introversion, Anthropomorphism and WOM

Then, we would like to establish how the three elements: anthropomorphism, introversion and word-of-mouth are interrelated. To begin with, we believe anthropomorphism and introversion are highly related. As is known, experience contributes to knowledge (Jaziri, 2019; Argote and Miron-Spektor, 2011). And since introverts have less or even lack social experience (Costa & McCrae, 1992; John & Srivastava, 1999; Weber, 1998), it leads to them having less anthropocentric knowledge, and eventually, it may be more difficult for them to anthropomorphize as it is harder for them to see the humanness in an anthropomorphized product. Moreover, even if introverts do have sufficient agent knowledge to anthropomorphize, there is still another reason that supports our prediction that they are less likely to anthropomorphize, and it is their weaker sociality motivation (Costa & McCrae, 1992; John & Srivastava, 1999; Weber, 1998). If they are less motivated to social affiliate with other people, it is very likely that they are also less motivated to social affiliate with an anthropomorphized product.

H3a: *Introverts, compared to extroverts, would be less likely to anthropomorphize*

Next, we would also like to incorporate online review behavior into the relationship between introversion and anthropomorphism. First, we would like to establish that WOM is essentially an interactive experience with a brand or product. Previous literature suggests that review website users do online reviews because of many reasons, and alongside other reasons is the desire to social interact (Sundaram, et al 1998; Cheung and Lee, 2012). Although by social interact they actually refer to interacting with other review website users, other literature does point out that WOM is essentially a brand value co-creation task (France et al, 2015; Payne et al, 2008), and that co-creation tasks are seen as an interactive experience with a brand (Hsieh and Chang, 2016; Payne et al., 2009). Therefore, by nature, review posting behavior could be defined as a social interaction with a brand or product.

To conclude, given that (1) WOM could be defined as a *social interaction*, (2) the introversion level of a person highly determines her knowledge about humans and motivation to engage in *social interaction*, and (3) two important factors for a person to anthropomorphize are the elicited agent knowledge, which one could gain through *social interaction*, and the sociality motivation, one's desire to *social interact*, we have decided to link up these three components: WOM, introversion and anthropomorphism because of one common facet of theirs: *Social interaction*.

Given that doing review for a brand/ product is essentially social interaction with a brand/ product, therefore, we predict that when a brand/ product becomes human-like, introverts would avoid doing reviews for it. And this leads us to the second hypothesis of essay 2 which measures introverts' review willingness:

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H3b: *Introverts, compared to a non-anthropomorphized product, would be less willing to engage in WOM behavior for an anthropomorphized product*

Study 2

Study Overview

To test our two hypotheses, we ran our second study online. In study 2, participants would see an animated birthday card according to their anthropomorphism condition. Next, participants would give their ratings and report their level of willingness to engage in online WOM behavior. Subsequently, we would measure their level of introversion, and lastly, ask for demographic information.

Participants and Procedure

Study 2 was a 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) between-subject experiment. We recruited a total of 281 participants on MTurk. They had an average age of 36 years old and were all US residents. 39% of them were male and 51% female.

Firstly, participants saw a tweet that promoted an animated birthday card which was introduced as a newly designed product by a greeting card company "Chipper the Alien". In the anthropomorphism: Yes condition, the card also had Chipper the alien who had human features (e.g. eyes, smile, etc.) on it and he was waving to the participants. Also, the twitter account appeared to be operated by

Chipper and used the pronoun "I", so that it's like Chipper talking directly to his audience (e.g. "It's me Chipper", "I just finished making a birthday card with a video of Myself!"). And in the anthropomorphism: No condition, there was no Chipper, only the birthday message. And the twitter account was introduced by the team of the company and it used the pronouns "We" and "Our", so that it was like the company talking to its audience (e.g. It's the team of Chipper", "we just finished making a birthday card!"). Then, participants were asked to provide their evaluations on the card on in terms of its interestingness, cuteness, cleverness and helpfulness on 7-point bipolar scales. Next, they would have to rate the card on a 5- star rating system. For our main dependent variables, to measure participants' willingness to engage in WOM behavior, they had to report their willingness levels to like, retweet and comment on the tweet using their personal twitter account.

After that, we would measure participants' level of introversion using the same Extroversion scale extracted from the Eysenck Personality Inventory (Eysenck, 1964). Lastly, we would ask for their demographic information.

Results

Manipulation check

First, we checked the competence of the anthropomorphism valence manipulation of the birthday card with a pre-test. Then, we ran a t-test. The human likeness level in the anthropomorphism: Yes condition (M= 3.9) is significantly higher than the anthropomorphism: No condition (M= 2.57, t (146)= 4.61, p= .00), suggesting the successful of manipulation.

Anthropomorphism Engagement levels

We then checked the engagement levels of anthropomorphism introverted and extroverted participants had. A 2 (Levels of Introversion: Introverts vs. Extroverts) x 2 (Anthropomorphism: Yes vs. No) ANOVA was performed. The anthropomorphism score was averaged from three measures: how much they thought (1) the card had its own intention, (2) freewill and (3) looked like a human. The results showed a significant main effect of anthropomorphism such that participants in the anthropomorphism: Yes condition anthropomorphized more (M= 2.68) than those in the No condition (M= 1.82, $F(1, 286)$= 7.10, p= .01). The main effect of anthropomorphism condition was qualified by a significant interaction ($F(1, 286)$= 5.33, p= .02). And the main effect of level of introversion was also significant; extroverts anthropomorphized more than introverts ($M_{extroverts}$= 3.02 vs. $M_{Introverts}$ = 1.85, $F(1, 286)$= 37.72, p= .00).

Then, we ran contrast analysis for the variable, which served the purpose to test whether there were any differences between engagement levels of anthropomorphism of introverts and extroverts. The contrast analysis was important because from the ANOVA results above we had no way to tell whether introverted participants have noticed the humanness in the anthropomorphized card, and how they differed from the fellow extroverted participants in the engagement levels. Thus, we needed to do such analysis in order to see how the means vary across conditions.

Results showed that the means in the two introvert conditions were not significantly different from each other ($M_{introverts\ x\ Yes}$= 1.89 vs. $M_{Introverts\ x\ No}$= 1.82,

$F(1, 286)= .06, p= .80)$. On the contrary, the means in the extrovert conditions were significantly different from each other ($M_{\text{extroverts x Yes}}= 3.50$ vs. $M_{\text{extroverts x No}}= 2.55$, $F(1, 286)= 12.66, p= .00$).

WOM behavior: Liking the tweet

The first WOM dependent variable is the willingness to like the tweet. We performed a 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) ANOVA analysis. Results revealed a significant interaction effect of anthropomorphism and introversion on the willingness to like the tweet ($F(1, 286)= 4.94, p= .03$). Next, we found a main effect of anthropomorphism; Participants in the anthropomorphism: Yes condition were more likely to like the tweet ($M= 3.09$) than those in the anthropomorphism: No condition ($M= 2.69, F(1, 286)= 4.05, p= .05$). Moreover, a main effect of introversion was also significant; introverts were less likely to like the tweet ($M= 2.23$) than extroverts ($M= 3.53, F(1, 286)= 34.14, p= .00$).

For the WOM dependent variables, we also performed the same contrast analyses to see how introverts had different willingness to engage in several WOM behavior across the two anthropomorphism conditions, and how they were different from the extroverted participants in the same two conditions.

The contrast results for the dependent variable willingness to like the tweet are as follows: First, willingness of introverts to like the tweet in the two conditions, anthropomorphism: Yes ($M= 2.21$) and No ($M= 2.26, F(1, 286)= .02, p= .89$), were not significantly different from each other. While extroverts' willingness to like the

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tweet in the anthropomorphism: Yes condition (M= 3.07) was significantly different from those in the No condition (M= 2.21, F(1, 286)= 9.19, p= .00).

We then replicated the results with a 2 (Levels of introversion: Introverts vs. Extroverts) x 2 (Anthropomorphism: Yes vs. No) ANCOVA with design expertise as the covariate. We also used the median split classification method, and the results were of the same trend. The interaction effect was significant (F(1, 290)= 3.86, p= .05). The main effect of levels of introversion and anthropomorphism conditions were both significant; Introverts were significantly less willing to like the tweet than extroverts ($M_{introverts}$= 2.23, $M_{extroverts}$ = 3.53; F(1, 290)= 13.12, p= .00), and participants in the anthropomorphism: Yes condition were significantly more willing to like the tweet than those in the feedback condition ($M_{Anthro: Yes}$= 3.09, $M_{Anthro: No}$= 2.69; F(1, 290)= 4.50, p= .04). Last but not least, the covariate was also significant (F(1, 290)= 15.53, p= .00), showing that this was an effective covariate.

Like essay 1, we also tried to replicate the results with another introverts/ extroverts classification method: top-bottom 27%. Unfortunately, the replication did not work as well as with the median split approach. Specifically, we conducted a 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) ANOVA. First, we found a significant main effect of introversion; extroverted participants were more likely to like the tweet (M= 4.01) than introverted participants (M= 2.04, F(1, 160)= 44.3, p= .00). However, the main effect of anthropomorphism was not significant; Those in the anthropomorphism: Yes condition (M= 3.23) were not significantly more willing to like the tweet than those in the anthropomorphism: No condition (M= 2.83, F(1, 160)= 1.41, p= .24). Moreover, the interaction effect was not significant (F(1, 160)= .57, p= .45). Nonetheless, the results with top-bottom

27% still directionally supported our theory and had the same trend with the results with median split.

WOM behavior: Retweeting the tweet

The second WOM dependent variable was willingness to retweet the tweet. A 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) ANOVA was performed. First, there was a significant interaction effect between anthropomorphism and introversion ($F(1, 286)= 5.66$, $p= .02$). Then, we found a main effect of anthropomorphism; participants in the anthropomorphism: Yes condition were more likely to retweet the tweet ($M= 2.80$) than those in the anthropomorphism: No condition ($M= 2.43$, $F(1, 286)= 3.91$, $p= .05$). Moreover, there was also a main effect of introversion such that introverts were less likely to retweet the tweet ($M= 1.89$) than extroverts ($M= 3.32$, $F(1, 286)= 46.20$, $p= .00$).

For the contrast test results, the mean in the Introverts x Anthropomorphism: Yes condition ($M= 1.86$) was not significantly different from the Introverts x Anthropomorphism: No condition ($M= 1.94$, $F(1, 286)= .08$, $p= .78$). On the other hand, the mean in the Extroverts x Anthropomorphism: Yes condition ($M= 3.78$) was significantly different from the Extroverts x Anthropomorphism: No condition ($M= 2.87$, $F(1, 286)= 9.31$, $p= .00$).

Then, we did a 2 (Levels of introversion: Introverts vs. Extroverts) x 2 (Anthropomorphism: Yes vs. No) ANCOVA with design expertise as the covariate, and median split as the classification method. The interaction was significant ($F(1, 290)= 4.35$, $p= 0.04$). The main effects of levels of and review on willingness to retweet were significant, showing that introverts were less likely retweet than

extroverts ($M_{Introverts}$= 1.89, $M_{Extroverts}$ = 3.32; $F(1, 290)$= 17.58, p= .00), and

participants in the anthropomorphism: Yes condition were more likely to post than

the anthropomorphism: No condition($M_{AnthroL Yes}$= 2.80, $M_{Anthro: No}$= 2.43; $F(1,290)$=

4.50, p= .04). Last but not least, the covariate of design expertise was also

significant ($F(1, 290)$= 23.12, p= .00), showing that this was an effective covariate.

Next, we also attempted to replicate the results with top-bottom 27%

approach to classify introverts. However, the replication did not work as well as with

median split. We ran a 2 (Levels of introversion: Introvert vs. Extrovert) x 2

(Anthropomorphism: Yes vs. No) ANOVA. First, we found a significant main effect

of introversion; extroverted participants were more likely to retweet the tweet (M=

3.81) than introverted participants (M= 1.63, $F(1, 160)$= 60.48, p= .00). Nevertheless,

the main effect of anthropomorphism was not significant; those in the

anthropomorphism: Yes condition (M= 2.95) were not significantly more willing to

retweet the tweet than those in the anthropomorphism: No condition (M= 2.50, $F(1,$

$160)$= 1.96, p= .16). In addition, the interaction effect was also not significant ($F(1,$

$160)$= 1.39, p= .24). Still, the results with top-bottom 27% were in the expected

direction with the results with median split.

WOM behavior: Commenting on the tweet

The final WOM dependent variable was willingness to comment on the

tweet. We did a 2 (Levels of introversion: Introvert vs. Extrovert) x 2

(Anthropomorphism: Yes vs. No) ANOVA analysis. First, there was a significant

interaction effect ($F(1, 286)$= 6.87, p= .01). Then, there was a significant main effect

of anthropomorphism; participants in the anthropomorphism: Yes condition were

more likely to comment on the tweet (M= 2.78) than those in the anthropomorphism: No condition (M= 2.35, $F(1, 286)$= 5.63, p= .02). Moreover, there was also a significant main effect of introversion such that introverts were less likely to comment on the tweet (M= 1.85) than extroverts (M= 3.36, $F(1, 286)$= 48.87, p= .00).

As for the contrast analysis results for willingness to comment on the tweet, the pattern was the same as before; The mean in the Introverts x Anthropomorphism: Yes condition (M= 1.83) was not significantly different from the Introverts x Anthropomorphism: No condition (M= 1.88, $F(1, 286)$= .03, p= .86). Contrarily, the mean in the Extroverts x Anthropomorphism: Yes condition (M= 3.77) was significantly different from the Extroverts x Anthropomorphism: No condition (M= 2.76, $F(1, 286)$= 12.77, p= .00).

Then, we replicated the results with a 2 (Levels of introversion: Introverts vs. Extroverts) x 2 (Anthropomorphism: Yes vs. No) ANCOVA with design expertise as the covariate, and median split as the classification method. The interaction effect was significant ($F(1, 290)$= 5.28, p= .02). The main effect of levels of introversion and anthropomorphism conditions were both significant; Introverts were significantly less willing to comment on the tweet than extroverts ($M_{introverts}$= 1.85, $M_{extroverts}$= 3.26; $F(1, 290)$= 15.89, p= .00), and participants in the anthropomorphism: Yes condition were significantly more willing to comment on the tweet than those in the anthropomorphism: No condition ($M_{Anthro: Yes}$= 2.78, $M_{Anthro: No}$= 2.35; $F(1, 290)$= 4.50, p= .04). Last but not least, the covariate of design expertise was also significant ($F(1, 290)$= 23.12, p= .00), showing that this was an effective covariate.

Then, we aimed to replicate the results with top-bottom 27%. But the replication only worked partially. We ran a 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) ANOVA analysis. First, there was a significant main effect of introversion; extroverted participants were more likely to comment on the tweet (M= 3.78) than introverted participants (M= 1.65, F(1, 160)= 58.08, p= .00). On the contrary, the main effect of anthropomorphism was not significant; Those in the anthropomorphism: Yes condition (M= 2.88) were not significantly more willing to comment on the tweet than those in the anthropomorphism: No condition (M= 2.55, F(1, 160)= 1.03, p= .31). In addition, the interaction effect was also not significant (F(1, 160)= 1.30, p= .26). Despite the insignificant effects, the results were still directionally backing our theory.

Evaluations and Rating: Interestingness

Next, analyses were conducted to see how the evaluations and ratings differed across conditions.

A 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) between subject ANOVA was executed. The results indicated a significant interaction (F(1, 286)= 7.41, p= .01). And the main effects of anthropomorphism and introversion were both significant; The anthropomorphized card was rated more interesting (M= 4.16) than the non-anthropomorphized card (M= 3.57, F(1, 286)= 9.54, p= .00). And introverts rated the card to be less interesting (M= 3.49) than extroverts (M=4.24, F(1, 286)=14.98, p= .00).

Next, we also ran a contrast analysis. With a similar trend to the contrast results in the Manipulation check part, results showed that the means in the two

introvert conditions were not significantly different from each other ($M_{introverts \times Yes}=$ 3.53 vs. $M_{Introverts \times No}= 3.45$, $F(1,286)= .07$, $p= .80$), while the means in the extrovert conditions were ($M_{extroverts \times Yes}= 4.82$ vs. $M_{extroverts \times No}= 3.68$, $F(1,286)=$ 17.28, $p= .00$).

Evaluations and Rating: Cuteness

A similar 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) ANOVA was executed. The main effects of anthropomorphism and introversion were both significant; The anthropomorphized card was rated cuter ($M= 4.83$) than the non-anthropomorphized card ($M= 3.69$, $F(1, 286)= 35.95$, $p=.00$). And introverts rated the card to be less cute (M=3.99) than extroverts ($M= 4.55$ $F(1, 286)=9.75$, $p= .00$). However, there was no significant interaction between anthropomorphism and introversion on cuteness ($F(1, 286)= 1.67$, $p= .20$)

Likewise, we ran contrast analysis. But the results this time were different from before; The means in the two introvert conditions were significantly different from each other ($M_{introverts \times Yes} = 4.41$ vs. $M_{Introverts \times No}= 3.50$, $F(1,286)= 10.81$, $p= .00$), and the means in the extrovert conditions also were different ($M_{extroverts \times Yes} = 5.26$ vs. $M_{extroverts \times No}= 3.85$, $F(1,286)= 27.19$, $p= .00$).

Evaluations and Rating: Cleverness

The next analysis is on the dependent variable cleverness. A 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) ANOVA was executed. The results indicated a marginally significant interaction between

anthropomorphism and introversion ($F(1, 286)= 3.59$, $p= .06$). And the main effects of anthropomorphism was significant; The anthropomorphized card was rated cleverer ($M= 4.15$) than the non-anthropomorphized card ($M= 3.59$, $F(1, 286)= 4.17$, $p= .04$). And the main effect of introversion was also significant; Introverts rated the card to be less clever ($M= 3.59$) than extroverts ($M= 4.33$, $F(1, 286)=14.19$, $p= .00$).

Subsequently, we also ran contrast analysis and here are the results: The means in the two introvert conditions were not significantly different from each other ($M_{introverts \times Yes} = 3.61$ vs. $M_{Introverts \times No}= 3.58$, $F(1,286)= .01$, $p= .92$). On the contrary, the means in the extrovert conditions were ($M_{extroverts \times Yes} = 4.82$ vs. $M_{extroverts \times No}= 3.68$, $F(1,286)= 7.93$, $p= .01$).

Evaluations and Rating: Helpfulness

Likewise, we ran a 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) ANOVA analysis. First, the main effect of anthropomorphism was significant; the anthropomorphized card was rated more helpful to someone who wanted to buy a birthday card for their loved ones ($M= 4.60$) than the non-anthropomorphized card ($M= 4.22$, $F(1, 286)= 4.30$, $p= .04$). And the main effect of introversion was also significant; Introverts rated the card to be less helpful ($M= 4.15$) than extroverts ($M= 4.68$, $F(1, 286)= 7.71$, $p= .01$). But there was no interaction between anthropomorphism and introversion ($F(1, 286)= .89$, $p= .35$).

Afterwards, we also ran contrast analysis and here are the results: The means in the two introvert conditions were not significantly different ($M_{introverts \times Yes} = 3.61$ vs. $M_{Introverts \times No}= 3.58$, $F(1,286)= .01$, $p= .92$). But the means in the extrovert conditions were ($M_{extroverts \times Yes} = 4.82$ vs. $M_{extroverts \times No}=3.68$, $F(1,286)= 7.93$, $p= .01$).

Evaluations and Rating: Rating

A 2 (Levels of introversion: Introvert vs. Extrovert) x 2 (Anthropomorphism: Yes vs. No) ANOVA was carried out. A significant interaction was found ($F(1, 286)= 4.03$, $p= .06$). Also, the main effects of anthropomorphism and introversion were both significant; The anthropomorphized card was given a higher rating ($M= 3.26$) than the non-anthropomorphized card ($M= 2.89$, $F(1, 286)= 8.48$, $p= .00$). And introverts gave a lower rating ($M= 2.87$) than extroverts ($M= 3.29$, $F(1, 286)= 10.97$, $p= .00$).

Then, we proceeded to run contrast analysis. Results show that the means in the two introvert conditions were, again, not significantly different from each other ($M_{introverts \times Yes} = 4.25$ vs. $M_{Introverts \times No}= 4.03$, $F(1,286)= .63$, $p= .43$) but the means in the extrovert conditions were ($M_{extroverts \times Yes} = 4.97$ vs. $M_{extroverts \times No}=4.39$, $F(1,286)= 7.93$, $p= .01$).

Discussion

The main effect of anthropomorphism in the manipulation check proved that the manipulation of anthropomorphism worked successfully. Then, the engagement levels of anthropomorphism gave us insight into how introverts responded to anthropomorphized products; results of contrast analysis revealed that even though the introverted participants in the anthropomorphism: Yes condition were presented with an anthropomorphized card, their likeliness to anthropomorphize the card were the same to those in the anthropomorphism: No condition, who were presented with a card with no human features at all. This suggests that introverts basically lack the

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anthropocentric knowledge to anthropomorphize, due to their insufficient social experience. On the contrary, compared to introverts, extroverted participants were more capable to notice the human features if they were presented with an anthropomorphized card. Therefore, the result supports h3a: Introverts, compared to extroverts, would be less likely to anthropomorphize.

Nevertheless, it did not directly mean that the anthropomorphized and non-anthropomorphized cards were the same to introverted participants in the two conditions, because introverted participants found the anthropomorphized card to be significantly cuter than the non-anthropomorphized card. This meant that the cards were in fact different to them, but they just did not think the difference was caused by the level of human likeness.

For our focal group of dependent variables: the WOM dependent variables, results showed that all three of them, including willingness to like, retweet and comment on the tweet, shared similar patterns. To be specific, the interaction effect and main effects of anthropomorphism and introversion on those three variables were all statistically significant. And that there was no significant difference between the Introverts x Anthropomorphism: Yes vs. Introverts and Anthropomorphism: No condition, but such difference was present between the two extrovert conditions. From these results, we could conclude that, first, anthropomorphism was not effective to motivate introverted participants to engage in WOM behavior including liking, retweeting and commenting on the tweet promoting the new birthday card. On the contrary, this strategy worked better for extroverted participants as they apparently were more likely to engage in those WOM behavior when the product was anthropomorphized. Second, even though there was a main effect of

anthropomorphism, the lack of difference in the introvert conditions showed that the main effect was caused by extroverts but not introverts.

These results, however, are not backing our H3b: "Introverts, compared to a non-anthropomorphized product, would be less willing to engage in WOM behavior for an anthropomorphized product." When we were developing h3a, although we did predict a main effect of introversion on anthropomorphism, which suggested introverted participants would be less likely to see the anthropomorphized card as a human, we did not foresee the results that to introverts, there would be no difference at all between the perceived humanness levels of anthropomorphism: Yes and No conditions. In fact, we only anticipated that introverts would be less able to tell the humanness difference than extroverts, meaning that the gap of perceived humanness levels between the anthropomorphism: Yes and No conditions for introverts would be smaller than extroverts. Then, we predicted this effect would spill over to participants' willingness to engage in WOM behavior; because introverted participants would still, although less likely than extroverted participants, be aware of a certain level of humanness of the anthropomorphized card, and that introverts tend to avoid social interaction, our introverted participants should be less likely to engage in WOM for the anthropomorphized stimuli than the non-anthropomorphized stimuli. However, the actual results showed a lack of difference between the perceived humanness levels for introverts in two anthropomorphism conditions. As discussed before, this suggested that introverted participants did not possess enough agent knowledge to acknowledge the humanness in the anthropomorphized stimuli at all. Therefore, the humanness of the anthropomorphized card could not properly cast an effect on their willingness to engage in WOM completely. As a result, for the

WOM dependent variables, there was no significant difference between the Introverts x Anthropomorphism: Yes vs. Introverts x Anthropomorphism: No condition. Although h3b was not supported, our results gave further support to our notion that introverts possess less agent knowledge, thus, they are less likely to anthropomorphize.

Moreover, one could say that the absence of difference of introverts willingness to engage in WOM behavior in the two anthropomorphism conditions, Yes and No, actually happened because introverts simply failed to notice that the cards were different at all, and the reason was not their lack of anthropocentric knowledge. However, the results of the cuteness variable suggested otherwise. As a matter of fact, introverts in the anthropomorphism: Yes condition, found the card to be significantly cuter than those in the No condition. This suggested that introverts did notice something different between the two cards, which led to them finding one cuter than the other. But they just did not think the difference was the level of human likeness. Therefore, introverts being able to notice two cards were different in other aspects but not humanness supports our theory that introverts and extroverts respond differently to an anthropomorphized product, such that introverts are less able to see the humanness in an anthropomorphized object.

Next, for our next group of dependent variables, perceived interestingness, cleverness, cuteness and helpfulness, results showed that there was a significant main effect of anthropomorphism on each of the dependent variables. This indicated that the use of anthropomorphism had a positive effect on the evaluations of the card. Also, the main effect of introversion on all the above variables were also significant such that introverts generally gave more negative evaluations than extroverts. This

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was consistent with the results of our study 1, that introverts generally evaluate products more negatively than extroverts. In addition, the interaction effect anthropomorphism and introversion had on interestingness and cleverness were significant and marginally significant respectively. This indicated that the impact of anthropomorphism on perceived interestingness and cleverness of our participants still depended on their level of introversion.

Subsequently, our contrast analyses gave us a deeper look into how anthropomorphism impacted our introverted participants' evaluations of the product differently from extroverted participants. Results of cuteness has been discussed previously, thus, we would not repeat the discussion in this section. Accordingly, the results of the other evaluation variables (interestingness, cleverness and helpfulness) have been very consistent across them all such that introverted participants in the anthropomorphism: The Yes condition did not find the anthropomorphized card to be better in terms of any of these three variables than the non-anthropomorphized card. Unlike introverts, extroverts consistently evaluated the anthropomorphized card more positively than the non-anthropomorphized card and they primarily drove the main effect of anthropomorphism. This suggests that anthropomorphized products are generally more appealing to extroverts but not introverts.

Then, for our next variable ratings, we found a significant main effect of anthropomorphism on participants' ratings. This showed that, overall, anthropomorphism had a positive effect on the ratings of the card, such that participants generally gave higher ratings to the anthropomorphized card compared to the non-anthropomorphized one. Next, the main effect of introversion on ratings was also significant such that introverts generally gave lower ratings than extroverts,

which also shared a similar pattern with our previous evaluation results. In addition, the interaction effect was also significant, suggesting that the effect of anthropomorphism had on ratings of the card still depended on their level of introversion.

Subsequently, contrast analysis results revealed that introverts did not differ in their ratings of the anthropomorphized and non-anthropomorphized card. The lack of difference in their ratings across two conditions showed that the main effect of anthropomorphism was driven by extroverts but not introverts. And this also pointed us back to the same conclusion we made before, that anthropomorphized products are generally more appealing to extroverts but not introverts.

To conclude, the overall results of the evaluations suggest that adding human elements to the product does not make it more appealing to introverts, because introverts are not able to notice the difference in humanness between the anthropomorphized and non-anthropomorphized product. As a result, not only does the human elements fail to boost the overall evaluations and ratings of the product, but more importantly, the willingness to engage in WOM behavior for the product. The results supported our theory that introverts have insufficient agent knowledge to tell the difference between the humanness levels of an anthropomorphized product and non-anthropomorphized product. Although our results were more in line with the lack of elicited agent knowledge mechanism, and that there was no indisputable data to support the sociality motivation mechanisms, we still could not rule sociality motivation out as an alternative explanation. Because even though we, based on the manipulation check results, inferred that introverted participants failed to tell the difference of humanness between the two cards, there is still a possibility that

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introverts did, in fact, notice the difference of two levels of humanness, but they just refused to accept the fact that the anthropomorphized card looked human-like and deliberately lowered their manipulation check ratings for the anthropomorphized card. This could have happened because they were worried that once they admitted the card was human-like, social interaction with the brand or the card would follow. Therefore, although our current study supported our predicted mechanisms, the elicited agent knowledge and sociality motivation factors, it could not separate the real factor(s) from the others. Lastly, even though it was not the main focus of the study, it is still worth noting that anthropomorphism increased the overall evaluations, ratings and willingness to engage in WOM behavior for extroverts. And the increment was high enough to lead to a significant main effect of anthropomorphism on those dependent variables, even though there was no increase for introverts. Moreover, when the WOM task was requiring higher involvement from participants, from only clicking a button, to expressing yourself by commenting on the tweet, extroverts' willingness to engage in the according WOM task also rose along.

Marketing implications

The current study has demonstrated how marketers can meet consumers' different needs, regarding their levels of introversion, in order to increase the general willingness to engage in WOM with the anthropomorphism strategy. Our results indicated that the anthropomorphism strategy is not a marketing strategy for every consumer. And it could not always increase the willingness to engage in WOM. It is necessary for marketers to consider the introversion trait of their target market if they

want to adopt such a strategy in any marketing channels or tools. If marketers are aiming at an introverted group of customers, they should avoid adopting the anthropomorphism strategy in the brand or product design.

Still, our study showed that if the target customers are not particularly introverted, anthropomorphism strategy would work for the company's benefit because it could enhance consumers' willingness to engage in online WOM. Therefore, if marketers could design a character that is congruent with the brand and product's image, marketers can consider applying the anthropomorphism strategy.

However, there are several limitations to study 2. First, we did not test the effect across different product types. The stimulus we chose was a gif birthday card, and, very often, birthday cards have characters, like people, animals or cartoon characters on them. Hence, this could be a reason why it was effortless and easy for participants to accept that there was a character on the birthday card stimuli as this was what they were used to or even expected. Thus, there is no proof that the results would be consistent across different product types. Hence, future studies should be conducted to test how product type could be a moderator of anthropomorphism.

Furthermore, our study could not differentiate the cognitive account, elicited agent knowledge, from the motivational account, the sociality motivation, or the other way around. Thus, there is no definite answer to what caused introverts' lack of awareness of the two humanness levels and lack of changes in their willingness to engage in WOM behaviors between two anthropomorphism conditions. Hence, in order to understand the relationship between anthropomorphism and introversion better, future researchers should try to differentiate the two sets of mechanisms.

Conclusion of Two Essays

Our two essays examine the WOM behavior of introverts. Essay 1 discusses how introverts' WOM behavior is affected by the review website design, and essay 2 discusses how their WOM behavior is affected by the anthropomorphism product design. Although there are discrepancies among the two essays, they share important implications.

First, results from essay 1 and 2 could aid marketers to create and craft their marketing plan in terms of the 4Ps of marketing mix. The 4Ps include product, price, promotion and place (McCarthy, 1960). Our essay 1 could give insights into planning a promotion plan for a company. Based on our results, marketers should opt for a design that does not allow feedback on their online review page, as this design could raise customers' willingness to post their review. Alternatively, for those companies who do not own their own review page, they could partner with a third-party review page that has a no feedback design. In consequence, the increased numbers of online reviews could help the company promote the products they are selling. Essay 2, on the other hand, gives insights into deciding a product's features and positioning. Results suggest that marketers should think twice before deciding on the anthropomorphism strategy as it might not be effective for all customers. But if used wisely, the anthropomorphism strategy could increase WOM engagement, product evaluations and ratings.

Nevertheless, there are limitations to the whole research that are applicable to both essay 1 and essay 2. First, we conducted our experiments on MTurk. In recent years, more and more researchers have investigated how MTurk workers are a biased subject pool. For instance, data suggested that MTurk workers are more introverted

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than laboratory participants or community sample (Colman et al, 2018; Goodman et al, 2013; Kasara and Ziemkiewicz, 2010). Therefore, using MTurk could lead to biased results.

Second, it is impossible for marketers to identify each customer's level of introversion and cater to it. Therefore, one might doubt the applicability of our results. However, please note that it is not the purpose of this research to help marketers to tailor make a marketing approach for each customer according to their level of introversion. Rather, one of our goals is to identify the most beneficial marketing approach in general. Moreover, even though it is impossible to measure a customer's level of introversion, some markets have more introverted customers than the other. For example, the book market should have more introverted customers and less extroverted customers than the party supplies market. Thus, marketers could re-evaluate their market from this perspective. Moreover, with today's digital computing technologies, it has become easier for companies to gain data on consumers' online consumption behavior, other related behavior like online WOM or just general posting on social media, which are great tools to help understand more about their customers' traits. For instance, based on the theories on introversion and our findings in essay 1, those who have a lower tendency to post things online, be it an online review or personal post, are more likely to be introverted.

There are several potential directions researchers could explore. First, one could investigate how introverts and extroverts differ in their review content. Since introverts avoid being the center of attention, according to the arousal theory (1967), and extroverts are the opposite, we predict that introverts are less inclined to use first-person pronouns in their review, such as "I" and "me" than extroverts. This

could uncover valuable implications since it was found that first-person pronouns usage in online reviews has downstream impacts. For instance, it makes reviews seem more authentic (Newman et al., 2003; Schindler and Bickart, 2012) and helpful (Skalicky, 2013).

Moreover, future research could also study how expected audience groups affect introverted willingness to engage in online WOM. According to Eysenck (1967), two characteristics of introverts are that they prefer a few close friends and not stand under the spotlight. But to extroverts, the more relationships they have, the better, and they like seeking attention from people. Thus, if introverts foresee that their review is only shared to their close friends instead of a huge audience, they would be more willing to share it. For instance, compared to review websites on which anyone could be an audience, if introverts are invited to share a product review on their social media which the audience is selected by the introverts themselves, they would feel safer doing so.

Furthermore, another potential direction is how to make introverts appreciate anthropomorphic brands or products more. We suggest two possible ways. The first way relates to consumer-brand relationships. According to Kim and Kramer (2015), consumers could have two types of relationships with an anthropomorphic brand; master-servant relationship and partner relationship. For the former, consumers would perceive the brand as a servant who works for them. And for the latter, a partner who works with them. Based on introverts' weaker motivation to socialize, they might prefer a servant brand, who simply takes its masters' orders and creates benefits for her, which requires a minimum level of interaction. Unlike a partner

brand, who cooperates with the consumer, which does not consist of giving orders but a higher level of communication and interaction.

To conclude, this research examines how introverted consumers react differently to marketing strategies than extroverts. Overall, we find out that a no feedback review website design and anthropomorphism strategy appeal the best to general consumers. And for introverted consumers, specifically, the no feedback design works better for them than the design with feedback, and the anthropomorphism strategy is not effective to them, as they seem to have trouble seeing the humanness in anthropomorphized products.

Appendix A

24-item Extraversion scale extracted from EPI

1. Do you like playing pranks on others?
2. Can you easily get some life into a dull party?
3. Do you find it hard to really enjoy yourself at a lively party? (R)
4. Would you say that you were fairly self-confident?
5. Would you be very unhappy if you could not see lots of people most of the time?
6. Do you like talking to people so much that you never miss a chance of talking to a stranger?
7. Are you slow and unhurried in the way you move? (R)
8. Do you like doing things in which you have to act quickly?
9. Do you hate being with a crowd who play jokes on one another? (R)
10. Do you like the kind of work that you need to pay close attention to? (R)
11. If there is something you want to know about, would you rather look it up in a book than talk to someone about it? (R)
12. Are you mostly quiet when you are with other people? (R)
13. Do other people think of you as being very lively?
14. Can you usually let yourself go and enjoy yourself a lot at a lively party?
15. When people shout at you do you shout back?
16. Do you prefer to have few but special friends? (R)
17. Do you like going out a lot?
18. Generally do you prefer reading to meeting people? (R)
19. Do you often do things on the spur of the moment?
20. Would you do almost anything for a dare?
21. Do you generally do and say things quickly without stopping to think?
22. Do you stop and think things over before doing anything? (R)
23. Are you usually carefree?
24. Do you often long for excitement?

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