

Language Choice and Marketing Communications

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Abstract

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The ever-increasing population of bilinguals raises important questions for marketing scholars. For example, the ubiquity of web-based retail platforms brings potential consumers to a single online marketplace, bombarding them with a myriad of options. Web retailers and advertisers typically post an online image of the products they sell, from which consumers must glean as much information as possible before making their purchase decision. With this in mind, marketers must decide how, and in what language, to best communicate with their audiences. This question is especially difficult to answer in bilingual populations, who may process information differently depending on the languages that they know. Previous research has suggested many mechanisms by which the choice of language may affect various brand outcomes. The present study was designed to examine whether presenting the same information in different languages has an inherent effect on cognitive patterns associated with information processing. We find partial support for the effects of language choice on emotion, recall, and narrative transportation, and lay the framework for future research.

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The world is getting smaller. Not only is it easier for people to move around the world and connect with each other across great distances, but learning a language is easier now than it has ever been, thanks to educational software and online communities. Consumers are learning from each other and bringing that knowledge with them into the online marketplace. We can logically expect the number of bilinguals to increase, as a result (Adesope et. al., 2010) The obvious question is how bilinguals leverage their abilities and process linguistic information differently from before. Studies across the social sciences have not yet explored the nuanced ways that this population may process linguistic information differently from monolinguals. People who speak more than one language have access to notions, thought patterns, and cultures that their monolingual cohorts may not, which may lead to different behavior and information processing. Perhaps presenting them with information in one language over another activates specific cognitive patterns that are either associated with or facilitated by that language. This study is among the first to explore the language-specific effects in a marketing context. It will also build on the current understanding of bilingual information processing by exploring the differences in the processing of information presented in native languages versus secondary ones.

Choosing the language of communication is an ever-increasingly important choice in reaching consumers. The global reach of online marketing and advertising efforts, for example, cross cultural and linguistic borders but still must appeal to consumers as effectively as ever. Online consumers often see a small image or read a brief description of a given product. Online retailers must therefore invest their page with as much easily digestible information as they can and assure that it is easy to understand and assimilate. Whereas the physical retail environment is affected by seemingly secondary factors, such as the type of flooring, in a physical retail

environment (Meyers-Levy, Zhu, and Jian, 2009), one can expect linguistic cues to have measurable ramifications in an online retail setting. Retailers the world over are well aware of the patent link between clear communication and the effectiveness of their message. The obvious link between language and communicability of ideas is, however, confounded by the addition of secondary languages, for instance in bilingual populations. The question of effective retailing in a bilingual ambient environment becomes more complex. The present work seeks to answer the following questions: How does the language chosen for a retail context affect the target audience's ability to process the information? Is there a difference between information processed by specific second language learners as distinct from others? How is information processed in a native language (L1) relative to secondary languages (L2)? These research questions do not fully capture the possible effects of language choice on consumer behavior. Further work may widen the scope of questions to answer the following: Do native speakers make different decisions compared to non-native speakers, given each group's distinctive abilities to process information communicated in the primary language? How does an online advertisement "speak" to people whose primary language is other than the communicated language? What information can readers glean? The contemporary interconnected world, along with its cross-cultural effervescence, compel marketing scholars and practitioners to find answers to these questions.

Theoretical Framework

Bilingual Information Processing

Before beginning to note the nuanced effects that language choice can have on the decision-making of bilinguals, it is worthwhile to discuss cross-disciplinary studies on language

and information processing. The processing of first languages (L1) has been demonstrated to be more effortful than secondary languages (L2). Luna and Peracchio (2012) conducted two studies on the extrinsic and intrinsic moderating factors that could influence the success of L2 processing, relative to L1, asking whether people can be motivated to understand information in a language which is not their native primary language. In the first study, the researchers found that bilingual individuals were less likely to retain information presented in L2, as opposed to L1. This effect, however, was attenuated in individuals with high need for cognition. This intrinsic motivating factor appeared to bridge a gap in understanding. Their data suggests that people who enjoy learning and who actively seek and undertake mental challenges, were able to allocate more cognitive resources into understanding and retaining the information presented in either L1 or L2.

Another of Luna and Peracchio's (2012) studies was designed to establish a similar model using an extrinsic motivational factor. The crux of their experimental manipulation was to exaggerate the importance of the information that was to be processed, motivating the participants to retain as much as they could. They found that what was true of intrinsic motivators was also true of extrinsic motivators, regardless of a particular individual's need for cognition. These studies suggested that although information processing is more effortful and less successful in L2, it can be processed and retained just as well as it would have been if presented in L1, as long as people are motivated to learn, be it intrinsically or to serve a utilitarian purpose.

After establishing the differences in processing L2 externally, the next important question to answer is whether a person would make the same decisions while thinking in a foreign language. Keysar, Hayakawa, and An (2012) submitted that thinking in a foreign language may

reduce decision biases. While not intuitively obvious, the difficulty of speaking or thinking in a secondary foreign language seemed to make decisions more systematic. Polyglots are usually more proficient in their native tongue and less proficient in learned languages, usually acquired in classrooms (Keysar et al., 2012). They posited that thinking and reasoning operate through two types of mental processes. The first type consumes more mental resources and is defined as being more analytic, calculating, rule-governed and systematic; while the other type is intuitive, heuristic, and therefore much faster.

Theoretically, speaking in a secondary foreign language may force individuals to rely more heavily on those analytic systems and deliberate thinking. It would be logical to assume that speaking in a secondary foreign language would impair an individual's ability to use systematic mental processes due to the heavy cognitive load associated with it. Thinking and speaking in a secondary foreign language (L2) may distance people from the intuitive immediate processes, as doing so is grounded in rational and analytic thinking. This has been evidenced in prior research that found that, even if people understand the meanings of heavily salient words, such as taboo words or expressions of love, they react to them less emotionally (as monitored by physiological measures such as skin conductance) if these are presented in a secondary foreign language (L2) (Harris, Ayçiçeği, & Gleason, 2003).

H₁: Bilinguals will exhibit higher emotional reactivity to exposure to an ad in L1 as compared to bilinguals exposed to an ad in L2.

Additionally, processing of secondary foreign languages is less intuitive and automatic, which further reinforces these arguments (Favreau & Segalowitz, 1983; Keysar, Hayakawa, & An, 2012). Keysar et al. (2012) proposed that whereas individuals usually depend on the framing or context of the problem when assessing risk, they were more likely to opt for a safer option if

the question was asked in a foreign language (L2). This, they argued, was possibly due to the attenuating influence of the secondary foreign language (L2) on the framing of the question. This study was conducted three times, whereas each successive experiment used a different language as the native condition (L1). The results were replicated in all three experiments, and one can therefore conclude that the attenuation of the framing effects is not dependent on the native language (L1). Differences between L1 and L2 processing were also not accounted for by cognitive load.

A competing theory, advanced by Caldwell-Harris & Ayçiçeği-Dinn (2009), is that the differences between L1 and L2 processing can be attributed to stress. Acute stress exacerbates the asymmetry in risk preferences between gains and losses (Porcelli & Delgado, 2009). This finding is supported by another work that found that using a secondary foreign language is often associated with increased stress (Caldwell-Harris & Ayçiçeği-Dinn, 2009). This, potentially, is a very powerful assay but before its application, one must carefully define the parameters of the notion of stress. It can be internally induced, as in a case in which the subject does not have proficiency in L1 or L2, or by external factors that moderate the subject's ability to absorb the information. It may still be true that motivation can attenuate these effects, but a stronger research question must be defined, that properly defines both notions of "stress" and "motivation" in measurable terms, in order to properly gauge the effectiveness of both theories.

These theories both suggest a more analytic and less automatic cognitive pattern when thinking in L2. When beginning to learn a language, people must concentrate on the rules, structure, and idiosyncrasies of the new language. This forces a calculating and analytic pattern of thinking that, we predict, will become the default strategy even long after gaining fluency. Thus, we predict that thinking in L2 will activate those same cognitive patterns that were helpful

during language acquisition. As such, we predict that semantic information – the specific words used in a text or story - will be better remembered when presented in L2. With less effort required by native speakers to process L1 information, we predict that extraneous details of an advertisement will be easier to recall.

H₂: Bilinguals will exhibit increased semantic recall of semantic ad information presented in L2, as opposed to L1.

H₃: Bilinguals will exhibit decreased recall of specific extraneous details if the accompanying text is presented in L2, as opposed to L1.

Evidence from Neuroscience

Opitz and Degner (2012) examined Event-Related Potentials (ERPs), a measure of neurological activity, in order to validate previous findings, such as those discussed above. They found a time-lag in the processing of L2 information as opposed to L1. This supported the notion that such processing is more difficult and could require more cognitive resources to execute. Furthermore, they found a higher detection rate of pseudo-words when they were presented in L1. This finding contrasted with Keysar et al. (2012) theory that thinking in L2 forces individuals to think more rationally and analytically. The detection of pseudo-words, however, may not provide enough evidence to refute Keysar's theory, as this effect may likely be the result of simple frequency effects. It may not require any analytical effort to detect these fake words because of how frequently people speak, listen, and read in L1 relative to L2, and similarly to the bilingual subject's fluency in L2, their mimetic skills, their level of education, their exposure to L2 over time and in different environments, and other idiosyncratic factors. The effect may further be complicated by the presence or absence of visual support data, and by the intervention of the chosen media as a salient and hitherto unaddressed element. The effect of thinking in L2

may be masked by the simplicity or complexity of the task at hand, and further study, both in neuropsychology and linguistics, is required before either theory can be dismissed or accepted.

One interesting implication the theory posited by Keysar et al. (2012) is that using L2 distances cognition from affect by the use of analytic mental processes. This would mean that a person's emotionality is inherently different depending on the language being used at the time. Wu and Thierry (2012) hypothesized that the automaticity of language processing may be affected by affective valence. The possibility of differential processing of positively-valenced and negatively-valenced stimuli, said Wu and Thierry, ought to be examined. Pavlenko (2012) used the term "disembodied cognition" in reference to the asymmetry in the affective processing of L1 and L2 information. He considered findings and theories proposed in various studies from clinical, introspective, cognitive, psychophysiological, and neuro-imaging studies and put forward a new model and argued that processing information in L1 and L2 provided the speaker or listener with distinct advantages. Affective information processed in L1 was found to be more automatic and was marked by heightened electrodermal reactivity to emotion-laden words.

Electrodermal measures are commonly used as an analog of the intensity of bodily arousal and, extrapolating there from, the intensity of an emotional response. L1 processing allows an individual to respond to what is being communicated more quickly and more accurately both in terms of valence and intensity. According to this theory, L1 processing allows people to be responsive not only to what is being said, but also what is being felt by the communicating party. On the other hand, the affective processing of L2 information was found to be less automatic, and electrodermal conductivity only differed slightly from baseline for negatively-valenced emotional stimuli. This could protect the listener from negative emotions and allow them to be more rational in difficult situations in which they had to employ L2. This

finding supported the theory posited by Keysar, Hayakawa, and An, that there exists an emotional disconnect when processing L2.

Two further theories were outlined by Pavlenko (2009) in order to explain his findings. Evolutionary psychology would proffer that humans evolved socially into living in small communities, their in-group, which provided them with protection from outsiders and from predators, while also helping them raise their offspring in an environment of emotional communion with their kin. The inability to connect with the emotions of people in another group, the out-group, or the inability to process emotion in L2, would therefore be seen as an adaptive response. It would have compelled people to stay within their in-group. There is, however, a considerable logical leap from linguistic abilities to evolutionarily-grounded sociological protection. A far more reasonable explanation of the results is the study of frequency effects. When individuals use a certain language more frequently, in emotional contexts, they acquire analytical skills and learn the nuances of emotionally-valenced sayings. People process affect in L1 more automatically because they have had experience using it in emotional contexts. Secondary languages (L2) would not be grounded in the same number of autobiographical experiences and the strong affective associations forged by native speakers would not yet have formed. Logic would dictate that people who acquired L2 earlier, or had much practice in using it, or have greater talent and capacity to internalize secondary linguistic tools, would show signs of automatically processing emotional information.

The Pavlenko (2009) study elucidated a serious problem with the validity of the L2 construct. The false dichotomy between L1 and L2 as primary and secondary languages is centred on the temporal order of their acquisition. It may be that people acquire L1 at home at a young age, but use L2 more frequently in their daily life. For such an individual, their analytic

and emotional abilities would expectedly be stronger in L2 as compared to L1. I would propose that future research address this problem by defining the L1 and L2 constructs according to performance on linguistic scales and, perhaps even on measures of emotional processing.

Language-Specific Effects

Marketing researchers are interested in the manner in which bilingual individuals process information in addition to the efficacy and receptivity of linguistic communication. On the basis of the aforementioned studies, researchers have supportable data and are attuned to the manner in which L2 is processed in terms of effort, accuracy, and emotionality. Conrad, Recio, and Jacobs (2011) examined three measures of bilinguals' performance on a visual lexical decision task. While such data are often marred by inconsistencies and large variance between individuals, the researchers implemented the use of ERPs and reaction time as reliable and easily comparable dependent variables. They studied German-Spanish bilinguals, with both languages serving as L1 and L2 in respective groups. Effect sizes decreased from L1 to L2 processing, suggesting weaker automatic processing of affective valence in L2. Negative valence affected error rates in the L2 when it was German in that negative words were more likely to cause errors. When L2 was Spanish, both positive and negative words generated more errors than neutral words. The ERP data in L1 displayed effects for both positive and negative words, and in the L2 for positive words in both conditions and for negative words in L2 Spanish. These results are compelling, but difficult to explain. The asymmetry between German and Spanish affective processing could possibly be explained by frequency effects and the construct validity of L2, but it is unlikely given the experimental control of both serving as L1. These differences may be attributed to cross-linguistic differences in the way that words are pronounced, the cultural propensity to express emotions, or the degree to which emotion is imbued into a sentence. The cross-linguistic

differences in affective processing may be explained by the degree of acculturation of the participants in the Spanish-as-L1 sample.

Acculturation is the process by which foreign individuals accept and internalize the culture and social norms of a host society. Dubish (2001) examined the effects of acculturation on consumers' preferences of products packaged in L1 relative to L2. Their sample of Korean Americans was divided according to the level of acculturation and time spent in America. Their preference of Hangul over English was measured as the dependent variable. Dubish found no differences across groups, suggesting that acculturation alone could not predict a significant amount of variance in the preference of L1 over L2 packaging. These findings suggested that the optimal packaging ought to be written in both L1 and L2 of a target market segment. Given the complex structure of contemporary society, markets need to be segmented as per the characteristics of the linguistic sub-groups of the target audience. In a Spanish speaking segment of an American metropolis, for instance, packaging ought to display English texts as L1, and Spanish texts as L2, in order to maximize the efficacy of marketing communiqués. In Arabic speaking segments, Arabic would be the preferred L2, and so on.

Gopinath and Glassman (2008) sought to test the implications suggested by Dubish's (2001) work and explored the differences in preference between unilingual and bilingual packaging. Interestingly, they found that unilingual packaging was rated higher if the language was an individual's native language. Linguistic ethnocentrism translates into a multi-layered marketing strategy that targets specific L2 linguistic groups. In other words, if a marketer wishes to reach Spanish-Americans, their best strategy would be to package goods exclusively in Spanish. This strategy is not feasible in the wider North American market. This study therefore

requires future researchers to explore new avenues of reaching bilingual consumers rather than simply including their L1 on the product packaging.

Narrative Transportation

Another mechanism by which advertisements may enhance brand attitudes and otherwise influence consumers is tied to the stories told within advertising. We may all be able to recall ads that touched us, made us laugh, shocked us, and the like. Despite their short length, these ads can influence us at a visceral level. The degree to which they are successful is called narrative transportation (Green & Brock, 2002). According to narrative transportation theory, individuals who engage with media, particularly interactive media (Green, Brock, & Kaufman, 2004; Steuer, 1992), may enter illusory experiences that are so absorbing and compelling that the individuals become cognitively, emotionally, and experientially transported into a new world (Burrows & Blanton, 2015). Transportation is an enjoyable state that people are motivated to maintain and that requires active mental participation from the audience (Green & Brock, 2002). Steuer (1992) posited that narrative transportation – at the time, referred to as “telepresence” – was similar to what poet Samuel Taylor Coleridge called “willing suspension of disbelief”. Within this state, an individual’s motivation and ability to argue against or resist persuasion attempts is reduced (Green & Brock, 2000). In these cases, people devote nearly all their conscious attention to experiencing and constructing emotional and cognitive meaning from events in a story (Busselle & Bilanzic, 2008). Though most of us would expect that narrative transportation can only occur when people watch films, read books, or listen to stories, that is completely incorrect. It has even been induced by still-image advertisements accompanied by a short, self-referential text (Escalas, 2007). As long as there is a narrative with which audiences can connect, audiences may enter a state of transportation.

Upon entering these illusionary scenarios, individuals temporarily abandon their connection with the real world and allow themselves to be guided by their current experience. Moreover, the strong emotions they may feel during such experiences further increase audiences' susceptibility to attitudinal and behavioral change (Green, Brock, & Kaufman, 2004). Some of the integral aspects of narrative transportation include emotional involvement with a story, attention, feelings of suspense or mystery, lack of awareness of one's surroundings, and vividness of mental imagery (Green & Brock, 2002). A transported person may not notice changes in the physical space around him or her (like someone else entering the room) or, on a psychological level, a distancing from his or her reality (Green & Brock, 2000), thus possibly making him or her vulnerable to persuasion.

Narrative transportation has been found to increase acceptance of presented ideas and reduce counterarguments for ideas such as acceptance of homosexuality, condemnation of crime, protection of privacy, support for the death penalty, and condemnation of drunk driving (Burrows & Blanton, 2015). Even when characters or events in a narrative are entirely fictional, engaging with them has been shown to be a powerful experience that shapes people's beliefs about the real world. Moreover, these new beliefs have been shown to persist beyond the state of narrative transportation (Appel & Richter, 2010). For example, in 2010, after the popular television series *24* ended, journalists noted an increase in positive attitudes toward torture as a means of extracting information—something that was done frequently on the show (Vaughn et al., 2010).

For narrative transportation to occur, there must first be a narrative. Mar and Oatley (2008) defined a narrative as a somewhat abstract model of a part of the social world, designed to transport the audience through a mental simulation of another individual's experience. Films,

video games, books, and stories of any kind are often created to serve such a purpose. Steuer (1992) emphasized the importance of crafting narrative experiences in such a way that audiences are encouraged to take on a “first-person” relationship with the environment. Transported individuals may escape their own realities, take on wildly different perspectives (like those of a villain, for example), connect with fictional characters deeply, and completely change their mood (Green, Brock, & Kaufman, 2004).

Though inducement of narrative transportation is simple, the interruption of it is just as easy. Audiences who are more affectively involved in programs are more sensitive to interruptions and “breaking” of transportation (Cowley & Barron, 2008). We can all remember experiences that we “just couldn’t get into.” This happens when narratives fail to grab our full attention to transport us. Sometimes this happens as a result of a poorly written narrative—the complexities of which are beyond the scope of this paper—and at other times, it is a result of external factors that jar us from the experience. People talking in the theater, a focus on surface aspects of a story (e.g., grammar and sentence structure), or even an uncomfortable chair can all take us out of a state of transportation.

No previous research has been conducted on the effects of language choice on the narrative transportation of audiences. If speaking in or listening to a secondary language inhibits emotional processing and engages analytical thinking schemes, and since emotional reactivity is such an integral aspect of narrative transportation, then perhaps L2s may inhibit narrative transportation. We thus hypothesize the following:

***H₄**: Bilinguals will exhibit decreased levels of narrative transportation if the accompanying text is presented in L2, as opposed to L1.*

Design

This study was designed to test differences in ad processing between bilinguals. Specifically, whether information was processed differently based on the language it is presented. French was selected following previous research which frequently compared English with other Latin-based languages, as well as my personal fluency with the language. Based on findings and critique of the aforementioned studies, I conducted a new study that serves both to validate previous research and to establish a strong foundation upon which new studies may be constructed. To this end, I tested the following hypotheses by comparing two groups of bilinguals: Native English speakers who were fluent in French and native French speakers who were fluent in English.

METHODOLOGY

Subjects

Three hundred participants were recruited from North America through Amazon's Mechanical Turk (MTurk) and were paid \$5 USD for their time. Thirty-seven were excluded for failing to answer an attention task correctly, leaving a sample of two hundred and sixty-three ($n = 263$, female = 86, mean age = 25 to 34). Prior to beginning the study, the participants were asked a French screening question to assure that they are sufficiently proficient so as to be considered properly bilingual. English fluency was assumed, as it is a requirement for registration and participation on the platform.

Stimuli

The stimuli presented to the participants consisted of still-image advertisements for fictionalized brands that mimic the advertisements that we would expect to see online or in print. The images were derived from existing ads by replacing the text and branding using Adobe Photoshop. Each stimulus was designed such that they might evoke a strong emotional response from viewers. One ad, originally for Greenpeace, featured plastic waste in the ocean in the shape of a school of fish and featured Dawn soap branding. The other, an ad for an organ donation organization, featured a man in a hospital bed hugging a silhouette of another man. Both ads were created in English and in French.

As language is central to the present study, the stimuli had to be as comparable as possible across linguistic conditions. The languages chosen for this study may be such that literal translations either change or amplify the original meaning of the text. For each ad, one translator translated the text from English into that language and another translator translated it back into English. The new text was found to be sufficiently identical to the original, so one can be relatively certain that the text read in the same way across English and French. The four stimuli can be found in Appendix B.

Procedure

Participants were exposed to two still-image advertisements; one for Dawn Soap and one for an organ donation foundation, France Adot. Each of these ads was presented randomly, one in English and one in French. This was done to best control order, linguistic, and ad-specific effects that might have influenced the results. To test our hypotheses, participants completed the following measures. All complete measures can be found in Appendix A.

Specific Recall: Participants completed a five-item measure of recall adapted from a procedure used by Luna and Perecchio (2012). It consisted of true-false statements about the ad that included “The advertisement contained a painting above the bed” or “The brand’s logo was written in blue”. Participants could answer “True”, “False”, or “I don’t know” which was always considered incorrect for the purposes of the study.

Semantic Recall: Participants were asked to recall the texts written in both advertisements and rewrite them from memory. Three independent coders rated the accuracy of the rewritten text on a scale of 1 (Barely approximated the original text) to 5 (Identical to the original text). They were also instructed to grant a rating of zero to any text that they felt indicated a complete lack of effort to complete the task. Examples included copies of research articles, messages intended for the researchers, and the words “NO THANKS”. An average rating across the three coders was computed and used in hypothesis testing. We found a high degree of inter-rater reliability across the coders, as per Hallgren (2012), as we computed an intra-class correlation of 0.946 ($p < 0.001$) for English and 0.937 ($p < 0.001$) for French responses. As the coders were known to the lead author of this study, a two-way mixed model was used to compute these ICCs, assuming random participant and fixed coder effects.

Overall, grades of zero were given to 37.6% of English and 41.4% of French responses. This raised questions about the quality of the responses of all participants, which will be discussed at length in a later section of the paper. Conversely, 36.5% of English and 33,1% of French responses received a perfect grade.

Emotion: Following research by Li, Walters, Packer, and Scott (2018), participants completed a six-item measure of emotional valence (happiness vs sadness) and a five-item

measure of emotional arousal. Both measures consisted of sliders that participants could place between two diametrically opposed feelings, e.g. Relaxed vs Stimulated, Despairing vs Hopeful. The responses to the measure of valence were reverse scored to facilitate statistical analyses. Factor analyses suggested that the scales loaded onto two distinct factors and a Cronbach's Alpha of between 0.93 and 0.96 confirmed a high level of internal consistency within the scales.

Narrative transportation: This was measured using the Narrative Transportation Scale-Short Form (Appel, Richter, Gnambs, & Green, 2015) consisting of five Likert scale items adapted for use with a specific medium (text, film, games). Participants rated their agreement with statements such as "I could picture myself in the scene of the events described in the (text)." on a seven-point Likert scale, and the results were summed to create a narrative transportation score. A test of internal consistency yielded a Cronbach's Alpha of 0.77, suggesting a moderate and acceptable level of reliability for the adapted measure. One item seemed to correlate weakly with the rest of the measure, but this may be due to the still nature of the narrative stimuli. Future iterations with different narratives are not expected to yield similarly low inter-item correlations and reliability will likely improve greatly.

One important factor that has been outlined in previous works must be accounted for and controlled for, in order to maintain external and internal validity. First, the dichotomy between L1 and L2 should no longer be based on temporal precedence, but rather on the skills of the speaker as determined by a linguistic screening measure. This would hinder comparison between results obtained in the present research effort and previous work, thus effectively excluding it from future meta-analyses. Even though this is a serious research limitation, this study will nonetheless contribute to the overall applicability of findings in marketing arenas. Changing the operational definition will enhance the prescriptive power of the findings.

Results and discussion

Emotional reactivity

One-way ANOVA revealed a main effect of L1 stimulus exposure on emotional reactivity $F(1, 261) = 8.877, p = .003, \eta^2_p = .033$. This was only the case in responses to the advertisement for organ donation and not for oceanic conservation and only in English. In all other cases, statistical significance was not reached. Interestingly, the only significant results did not support H_1 , but rather suggested that processing emotional messages in English as a learned language slightly increased emotional reactivity. Though the effect is small, it does pose interesting questions about the assumptions made in this study as well and the quality of the data. It is likely that the emotional manipulation was not powerful enough, particularly in the case of the underwater ad, and therefore did not elicit a detectable difference between groups on our measure. The fact remains, however, that the direction of the only significant result lies in stark contrast with previous studies. If this finding were to generalize to other emotional manipulations then it may be explained by inherent differences in thought process between the two languages surveyed in this study, specifically. This is an interesting avenue of research but is, for now, outside the scope of this work.

Semantic Recall

Our findings partly supported the hypothesis that bilinguals will exhibit increased semantic recall of semantic ad information presented in L2, as opposed to L1 (H_2). Linear regression ($Y_{\text{SemRec}} = \beta_0 + \beta_{\text{L1EnglishWater}} + \beta_{\text{L1EnglishHospital}} + e$) yielded a significant main effect of L1 English presentation on semantic recall across both ads $F(2, 260) = 5.021, p = .007, \eta^2_p = .37$. Presenting an ad in English to a non-native speaker will increase that speaker's likelihood to

remember the semantic details – the exact wording – of the message relative to native speakers. Though the effect is small, it does provide support for H₂. In French, the results trended in the opposite direction but did not reach statistical significance. Further research is required to unpack this finding and to establish whether this effect is only present between certain linguistic pairs or if mediator or moderator factors may be at play. It is possible that specific words in either language may affect recall. This will be examined further in future work.

Specific Recall

Our hypothesis that bilinguals will exhibit decreased recall of product details if the accompanying text is presented in L2, as opposed to L1 (H₃) was not supported. A one-way ANOVA found no significant main effects of L1 presentation on specific recall of ad details. It is worth noting, however, that the results trended much in the same way as those yielded in the tests of H₁. The differences between groups were negligible in all cases except when examining L1 French exposure of the hospital ad, which was the only test to approach significance, $F(1, 261) = 3.573$, $p = .06$, $\eta^2_p = .014$. This suggests a link between emotional activation and specific recall that also lies in contrast with previous findings. It appears presenting information in French has an inherent effect on its processing or rather that native French speakers employ a different mental process in taking it in. Future phases of this research may treat emotional activation as a moderator or mediator of specific recall. Post-hoc moderation tests did not yield significant results.

Narrative Transportation

We found partial support for our hypothesis that bilinguals would experience higher levels of narrative transportation when presented with a narrative in L1 rather than in L2. Linear

regression analyses demonstrated a main effect of L1 on narrative transportation after exposure to the underwater ad, $F(2,260) = 5.359$, $p = .005$ but not at all in the hospital ad. This effect was primarily driven by the English as L1 condition, a finding that was confirmed by post-hoc hierarchical linear modeling. The data suggest that presenting an English narrative to a native English speaker will pull them into a slightly ($\eta^2_p = .033$) more intense narrative experience than a presentation in a learned language. No evidence was found to support a hypothesis predicting that doing the same for a French native speaker would yield similar results. This suggests that there is a difference in the induction of narrative transportation across languages. Perhaps native French speakers are, for some reason, less susceptible to transportive experiences than English speakers. Conversely, there may be different requirements for narrative transportation to occur in different languages. Extraneous variables such as tone or vocabulary may play mediating or moderating roles in the relationship between narrative transportation and language.

It is interesting that the higher levels of emotional reactivity associated with the hospital ad were not linked with higher levels of narrative transportation. Previous work has established a link between Narrative transportation and emotional activation. Narrative transportation is, in part, defined by an increased state of emotional susceptibility. Post-hoc regression analyses found a miniscule effect of emotional activation on narrative transportation for the underwater ad $F(1,258) = 4.011$, $p = .046$, $r^2 = .02$, but not for the hospital ad. Participants seemed to report higher transportation into the underwater ad. This finding suggests that a yet unknown mediator altered the nature of the relationship between the constructs. It may be that the hospital ad presented a narrative that was too difficult or painful to imagine, which could have affected an audience's experience. Perhaps the pacing or some other aspect of presentation interacts with the

narrative itself in the induction of transportation. Strangely, one item in the measure for narrative transportation asked participants to rate their emotional reactions to the ads.

General Discussion

This study was designed in order to explore the effects that reading in a specific language has on emotion, recall, and narrative transportation. We predicted that when presented in one's native language, messages would elicit more intense emotional responses and feelings of narrative transportation. We further predicted that the exact wording would be more difficult to remember, and specific details therein would be easier to remember. We posited that these effects would indicate an increased automaticity in the processing of native-language information and, in the case of semantic recall, the added strain of second-language processing as shown by Keysar, Hayakawa, and An (2012).

Our data suggest partial support for two of our four hypotheses, though more work is necessary before definitive conclusions can be reached. The results of the first and third hypothesis tests are striking but may be the product of problems with our manipulation or sample. The present study provides evidence that native language processing does lead to increased affective and transportive experiences, though only under yet unknown conditions. The same can be said of learned language processing on semantic recall. The results of the present study make a compelling case for further research into the effects of learned languages and native languages on information processing.

Limitations

The impact of the findings from this study is dependant on the quality of the data. Over nine hundred MTurk workers attempted to participate in the study, despite an overwhelming majority of them not speaking French. Of the respondents that were able to pass the screening task, some may not have been truly fluent in French. Additionally, no distinction was made between participants who learned L2 as an adult or as a child. This may affect not only the degree of fluency, but also the cognitive patterns associated with thinking in L2. Future studies that employ MTurk workers should include a more rigorous screening process. This may be difficult to implement as it will increase the time required to implement the study and the cost per response.

Many of the responses to open-ended questions, such as those in the semantic recall measure, seemed to elicit low-effort responses. This may indicate that some respondents took issue with some aspect of the study, though it may be difficult to assess which part, in particular. We did our best to provide a short, clear task with a generous reward. These responses may not have been reactions to the study itself but may be an artefact of working with MTurk. Workers are incentivized to complete as many tasks as possible, so they may not want to put in the effort to answer open-ended questions.

The stimuli used in the present study, still-image advertisements, which may have limited the strength of the hypothesized effects. An image may not be as effective at eliciting emotions or narrative transportation as a video or interactive game. It is possible that more vivid stimuli might increase the sizes of the effects found within the present study. Alternatively, it may be that the narratives presented, particularly in the hospital ad, were too upsetting. Perhaps

respondents did not want to engage with such a difficult narrative and did not allow themselves to feel the associated emotion.

Future Research

The pattern of results found in the present work suggests that there are many yet unobserved or untested variables that may mediate or moderate the effects found within this work. One such variable is the intensity of the stimuli used. This will allow us to better test our hypotheses as more intense stimuli may elicit more intense emotional and transportive experiences. Moreover, manipulating the intensity of the stimuli may allow us to test new hypotheses. Narrative transportation, for example, could be considered as a mediator of the effects of L1 processing on emotion. A study could be designed in which participants are assigned to different conditions of transportation, as opposed to measuring it later. One condition could use a still-image, another a video, and yet another an interactive game. Such a study would be able to test not only a mediating effect, but a dose-like one whereby more or less transportation could be associated with more or less of mediation.

This study begs the question as to whether language proficiency, like narrative transportation, has a dose-like effect on cognitive processes. If languages do indeed activate cognitive patterns, perhaps novice learners exhibit less and expert speakers more of these patterns. Perhaps this effect is binary; whereby once a level of proficiency is reached, a pattern is activated. The nature of this effect may also be specific to a combination of languages. Future research must therefore continue to examine similar effects across many different languages and combinations thereof. This field is in its infancy, and exciting new directions for research are hiding around every corner.

Not all languages are built on the same linguistic frameworks (Latin, Cyrillic, Sinitic, etc), and the thought processes that they may facilitate can differ. Chinese, for one, is a language that is heavily steeped in metaphor, both in its pictographic writing system and in its structure (Dong & Tian, 2009). A pictographic writing system forces readers and writers to use often complex metaphors to communicate rather simple ideas. Consider the Chinese word for sorrow as an example. It is written by combining the pictograms for “man”, “below” and “forest”; this paints a rich metaphorical picture of a complex psychological state. A study could be designed to introduce a new moderating variable, metaphoric competence, and to synthesize previous work from psychology, neuroscience, and linguistics into a marketing model. As per Littlemore and Low (2006), I define metaphoric competence as both knowledge of, and ability to use, metaphor. A metaphor is the use of one concept (a vehicle) to represent another (a target). For example, if I were to say that it is “raining cats and dogs”, then cats and dogs are temporarily given a new meaning: heavy rain. Metaphors are involved in almost every area of language and are important tools for communicating, understanding language, and building a vocabulary (Littlemore & Low, 2006) and facilitate the comprehension of complex and unfamiliar ideas through basic and familiar ones (Lakoff and Johnson 2011). Sometimes, the words we want to use to describe complex or highly emotional things are simply lacking, so we rely on metaphors. They are so commonly used, that text analysis suggests that people used metaphors, on average, once every 25 words (Graesser, Mio, & Millis, 1999). This study was conducted many years ago and I argue that it is likely that this number has only increased since then, given the pervasive use of “emojis” and acronyms such as “ROFL” (rolling on the floor laughing) or “LOL” (laughing out loud). Both acronyms rarely describe the current status of the writer and are, in my opinion, metaphoric.

Metaphoric ability is thus quite important in developing the depth of understanding of a language. Past studies have shown that when educators draw specific attention of language learners to the sources and roots of metaphor, these learners increase their abilities to learn and retain that specific language. Shore (1996) argued that metaphor is the key to understanding culture. Building a knowledge-base of shared cultural experiences and references is necessary if one wants to understand and speak a language accurately. Metaphoric ability therefor fosters increased understanding and appreciation of particular events, places, attitudes, and people. Previous research has often treated metaphoric competence (often named Metaphoric Thinking Ability or Metaphoric Intelligence) as an innate, relatively stable, psychological construct that is notoriously difficult to measure (Burroughs & Mick, 2004). The next study could take a different approach. I argue that learning Chinese necessarily forces a pattern of metaphoric thinking. Proficiency with the language requires a deep understand of metaphor, relative to English or other Romance languages. This constant interaction with metaphor allows for continued exposure to and practice with decoding emotional subtext. I predict that this metaphoric thought pattern will, in turn, be associated with a pattern of emotional activation that mirrors L1 speakers. Native English speakers have developed their metaphoric ability as it pertains to their language, but perhaps not others. When marketers present information in a given language, it may activate thought patterns that are often associated with or facilitated by that language. Perhaps learning Chinese is very different, in this sense, than learning other less metaphorically grounded ones. As compared to L1 English speakers who learn other languages as their L2, I predict that L1 English speakers who choose Chinese as their L2 will exhibit patterns of emotional reactivity that are not normally associated with non-native proficiency.

Statement of Contribution and Conclusion

Internet-based retail is becoming ubiquitous and, increasingly, an integral and vital part of consumers' retail environment. Once limited by geographic and linguistic barriers, even smaller retailers are now able to expand their reach to the global retail arena, unhindered. This increased reach means that new segments of consumers will have access to their wares. These new consumers, unbound by geography, bring with them their own culture and language. Choosing a language over another to communicate with them might activate cognitive specific cognitive patterns, which may affect their purchase behavior. The present study is built on previous research on bilingual ad processing, it focuses on the virtual platform of the online retail environment, specifically within bilingual populations.

The results of this study partially supported our hypotheses, which carry with them implications for marketers, linguistic scholars, and psychologists. Marketing managers may want to consider the effects of presenting information in one language over another over and above the cultural or ethnocentric implications. Academics may continue to build the collective knowledge base of bilingual ad processing. Future studies should further explore the inherent differences between languages, especially of non-Latin ones. Very few studies have examined these types of bilinguals, which may or may not behave similarly to those in the present study. Other studies could be conducted in order to examine potential differences across varying L1 speakers who share an L2 or between polyglots who speak three or more languages.

Appendix A – Measures

Emotion:*Pleasure*

Please indicate on the following sliders the degree to which you feel the following emotions after looking at the ad with the UNDERWATER scene.

Unsatisfied Satisfied

0 100

()	
----	---

Unhappy Happy

0 100

()	
----	--

Annoyed

Pleased

0

100

()



Melancholic

Contented

0

100

()



Despairing

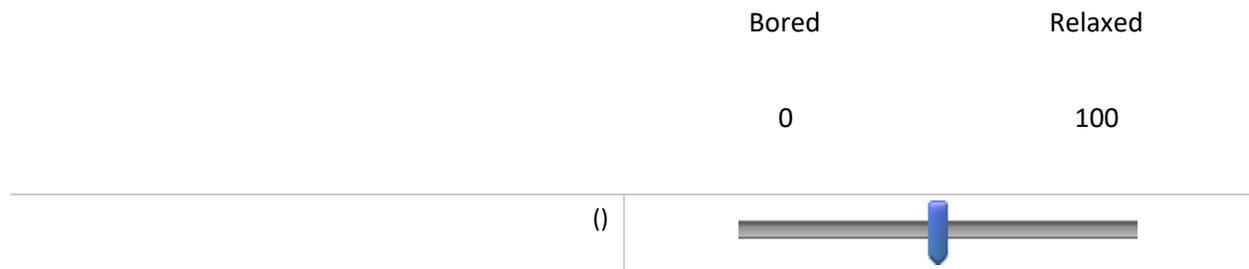
Hopeful

0

100

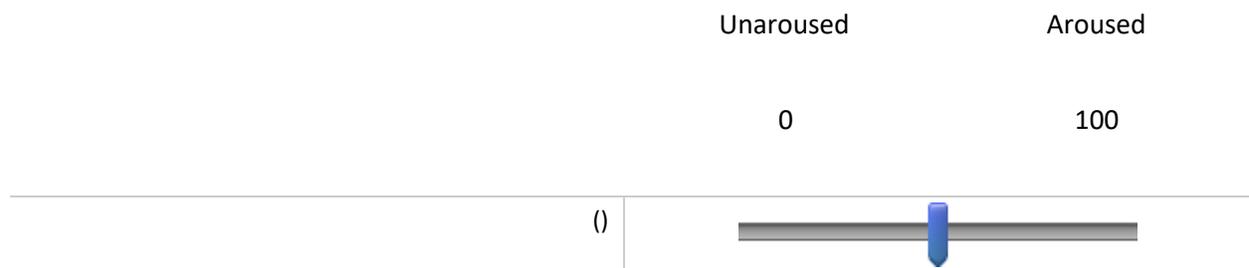
()





Arousal

Please indicate on the following sliders the degree to which you feel the following levels of arousal/excitement after looking at the ad with the UNDERWATER scene.



Sleepy

Wide Awake

0

100

()



Relaxed

Stimulated

0

100

()



Sluggish

Frenzied

0

100

()



Semantic Recall

To the best of your ability, please try to rewrite the words exactly as written in the first ad that you saw **in the language in which they were written**

To the best of your ability, please try to rewrite the words exactly as written in the second ad that you saw **in the language in which they were written**

Specific Recall

The following questions relate to the ad with the HOSPITAL SCENE

	True (25)	False (26)	I do not remember (27)
The ad was for a blood donation drive (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The brand's logo was written in blue (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There was a painting above the bed (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The man in bed had a glass of water (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The bed had white sheets (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix B – Stimuli

French Hospital Ad**English Hospital Ad****French Underwater Ad****English Underwater Ad**

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