

Bryant University

HONORS THESIS



The Effect of Native vs. Foreign Language on Consumer Visual Perception

BY Gabriela Reymont

ADVISOR • Ganga Urumutta Hewage
EDITORIAL REVIEWER • Patricia Gomez

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ABSTRACT

This research examines the effect of language on visual perception. Specifically, how the use of native language vs. foreign language affects preference for different elements of visual perception (e.g. low movement vs. high movement, angular shape vs. circular shape).

Although language usage has been found to influence consumer perception, past literature has failed to examine language as the antecedent of visual perception. To fill that gap, two controlled experiments are conducted in a survey format. Within the survey, participants examine marketing stimuli presented either in their foreign language or native language. For the first experiment, participants choose between packaging with low vs. high movement symbols. For the second experiment, participants choose between circular vs. angular shaped packaging. ANOVA is one of the tests used to analyze the data, in which language (native vs. foreign) is considered an independent variable and visual perception (movement vs. shape) is a dependent variable. The results of these experiments show that native speakers prefer logos with movement and circular packaging. These findings aim to contribute to literature in both visual perception and language effects, as well as to provide insights to international marketers seeking to develop their marketing mixes.

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INTRODUCTION

The topic of this Honors Thesis is the effect of native vs. foreign language on consumer visual perception. This topic is within the context of bilingualism. This subject is important because markets are becoming increasingly globalized. With internationalization and globalization, marketers are faced with the task of serving consumers who are diverse in their language usage. Globally, more than 60%-75% of consumers speak at least two languages (Vince, 2016). To satisfy the needs and wants of these consumers, marketers must be aware of how they process and perceive the world. There is ample evidence which suggests that the use of native vs. foreign language has different outcomes on processing and perception (Hayakawa & Keysar, 2018). Such influence has a direct impact on how consumers perceive the visuals, promotion campaigns, and packaging created by marketers. By investigating how native vs. foreign language affects consumer visual perception, marketers can use this information to better serve their consumers by increasing their overall customer satisfaction. Satisfied consumers will be more loyal, which in turn can lead to them bringing more profits to a company. Therefore, it is important to understand the effect of language on consumer visual perception. The rest of this Thesis examines this effect by conducting a literature review, proposing research questions & hypotheses, discussing methodology, evaluating results, and providing a general discussion.

LITERATURE REVIEW

After conducting a review of the existing literature, it was discovered that there was not yet an established link between native vs. foreign language and consumer visual perception. In order to create this connection, language and visual perception are thought of as key constructs, with the former being the independent variable and the latter being the dependent. From there, the review of the literature begins with bilingualism, native vs. foreign language within bilingualism, and visual perception as the foundation. The review flows from the broader topics on which the greatest amount of research has been found to more specific topics on which less research has been previously conducted. The exact order goes as follows: bilingualism, native vs. foreign language, visual perception, shape perception, movement perception, consumer visual perception, and potential mechanisms. Overall, it is the aim of

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this review of existing literature to further develop the hypothesis that suggests there is an effect of native vs. foreign language on consumer visual perception. To begin this process, I begin by reviewing some key findings of past literature in the order listed above.

Bilingualism

Current research on bilingualism has suggested that there is a difference between bilinguals and monolinguals in terms of brain function. One of those differences is that bilinguals have higher brain activity than monolinguals. This is attributed to the fact that bilinguals process more information due to knowledge of more than one language, and therefore have more complex neural networks (Costa & Sebastian-Galles, 2014). Within these neural networks, functional connectivity, also known as the relationship between different regions of the brain, is also said to be stronger in bilinguals (Grady et al., 2015). In addition, prior research has also shown that bilinguals can perform tasks that involve executive control better than monolinguals (Bialystok, 2011). As there are differences between bilinguals and monolinguals, these findings would propel me to question whether these differences can extend to native and foreign language speakers within the context of bilingualism.

Native vs. Foreign Language

The cognitive benefits of bilingualism appear to extend to foreign languages, as well. There are notable differences between outcomes of native vs. foreign language. According to the findings of Hayakawa, thinking in a foreign language compared to a native one can go so far as to reduce biases found in decision making (Keysar et al., 2012). This could prove to be a useful finding for marketers as they could infer that a consumer selecting a certain product is less biased in their decision-making process if they are thinking about their purchase decision in a foreign tongue. Looking at this benefit more in-depth, Hayakawa also brings up the conclusion that there is more consistency in choice within the less emotional foreign language being used in the decision-making process (Marian et al., 2018). This means that if a person is using a foreign language that is less emotional, then there will be more consistency in choices they make during the decision-making process. As found in previous studies of bilingualism, learning a foreign language can still impact the brain and produce changes to neural architecture regardless of when the language is learned (Hayakawa & Marian, 2019). Other

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research on foreign language effects has found that people tend to be more honest when they use a native language rather than a foreign language (Bereby-Meyer et al., 2018).

Visual Perception

Visual perception is defined as “the ability to perceive our surroundings through the light that enters our eyes” (Interaction Design Foundation). The literature on visual perception suggests that there are seven categories of visual stimulus categorization: geometric, format, statistical, temporal, goal, structural, and other (i.e. size, texture, movement) (Raghbir, 2009). The visual stimuli within my experiments that are relevant to this research fall under the categories of geometric and other. This part of the literature is primarily motivated by Raghbir’s work and literature from 2009. However, a more recent and updated conceptual framework expands on Raghbir’s findings by deconstructing visual perception on a deeper level than just its sub-components (Sample, 2019). According to Sample, deconstructing visual perception in such manner can help explain how specific aspects within visual perception affect consumers. Knowing these specific aspects can be helpful to marketers because they can target their audience in a more precise way. Along with this, small changes in packaging can have large effects on consumer purchase decisions, which in return influence both sales and profits (Raghbir & Greenleaf, 2006). This is because package design is of great importance to consumers.

Shape Perception

Although shape has yet to be examined on a deeper level in terms of packaging, there have been studies that show how logo shape affects the way consumers judge product attributes. It has been found that both circular and angular logo shapes have direct effects on consumers. When presented with circular logos, consumers think of compromise, a sense of belonging, and comfortableness. However, when shown angular logos, consumers think of confrontation and uniqueness (Jiang et al., 2016). Another interesting finding in regards to circular logo shape is that brand commitment can negatively influence the evaluation of rounded logos, and this evaluation can mediate impacts on brand attitude (Walsh et al., 2012). In one of the experiments conducted by Jiang and his fellow researchers, it was also shown that the effect of circular and angular shapes is reduced when people have a lower disposition to generating

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imagery (Jiang et al., 2016). This could be connected back to the topic of language within this Thesis, as consumers thinking in their foreign language as opposed to their native one may have a lower disposition to generating images. Furthermore, logo shapes can also influence perceptions of masculinity and femininity within a brand (Lieven et al., 2015). Connecting back to the original hypothesis driving this research, I believe the use of native vs. foreign language can have different effects on preference for angular and circular packaging.

Movement Perception

In terms of movement, research is present on static vs. dynamic components of visual perception. According to the experiments conducted by Cian, Krishna, and Elder (2014), dynamic imagery is in fact a very important aspect of logo design. It can affect levels of consumer engagement and attitudes, as well as brand attitudes. Along with these findings on movement, another extremely important finding deals with consumer behavior. It is possible to elicit desired consumer behavior by incorporating dynamic elements into the design of a logo (Cian et al., 2015). This finding can be very useful to marketers when trying to provoke a specific desired response from a group of subjects. Further work on movement perception shows that moving images also get more attention than static images, and consumers have higher purchase intentions for hedonic products (Brasle & Hagtvedt, 2016; Park et al., 2005; Roggeveen et. al, 2015). Other research by Cian, Krishna, and Elder (2014) found that consumers may even perceive and interpret movement from static visuals. Therefore, I believe when different types of movement within visual perception (low vs. high) are linked with native and foreign language, there can be different effects. Since the review of the literature has suggested that there is little to no research examining how native vs. foreign language affects visual perception, this research attempts to link those two constructs.

Consumer Visual Perception

The topic of consumer visual perception in itself yields far less results in the analysis of prior literature. However, one study that stood out in particular yielded a few extremely important conclusions that are relevant to both the study of consumers and marketing. This study was conducted by Raghbir, once again, and focused on shapes and ratios of proportions. Evidently, small changes in package shapes can actually have large effects on consumer

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purchase decisions and may therefore largely influence sales and profits (Raghbir et al., 2006). This is because package design is of great importance to consumers. However, a gap in this research would be that aesthetic considerations in packaging shape or design have yet to be looked at in-depth (Raghbir et al., 2006).

Potential Mechanisms

Although testing the underlying mechanisms may be beyond the scope of this research, I have discovered some potential drivers behind the effect of native vs. foreign language on visual perception. One potential driver is the hypothesis of linguistic relativity, also known as the Sapir-Whorf hypothesis, which demonstrates that learning another language affects perception. This essentially states that the specific language a person speaks affects the way they think about reality and life (Lucy, 2015). This provides solid evidence supporting the findings that there are differences in visual perception.

Another potential driver is the fact that there are variances in mental imagery depending on the language utilized (Hayakawa et al., 2018). When a foreign language is used, mental imagery tends to be reduced compared to when using a native language. This is because using a foreign language requires more neurological effort than using a native language, so the available resources within one's mind may be restricted when not using a native tongue. Based on the above reasons, I believe that it is reasonable to assume that language (native vs. foreign) affects consumer visual perception. It is worth testing these effects in a consumer context.

RESEARCH QUESTIONS AND HYPOTHESES

Research Questions

The goal of this research is to establish a connection between native vs. foreign language and consumer visual perception. The research questions guiding this work are as follows:

1. Is there an effect of language (native vs. foreign) on visual perception?
 - a. Is there an effect of native vs. foreign language on perception/preference of angular or circular shapes?

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- b. Is there an effect of native vs. foreign language on perception/preference of low movement vs. high movement symbols?
- 2. If there is indeed an effect of language on visual perception, what kind of effect do native vs. foreign language specifically have on visual perception?

Theoretical Background

In order to develop the prior research questions into hypotheses, the theoretical background of the work was further evaluated. In doing so, it was found that using a foreign language requires more effort (Hayakawa et al., 2018). Additionally, processing moving objects requires more effort as well (Roggeveen et al., 2015). Based on these two findings, it could be predicted that if using a foreign language requires effort, and so does processing moving objects, then foreign speakers could prefer static symbols with less movement as compared to native speakers.

Another finding leading to a hypothesis could be the fact that circular shapes are seen as more friendly and comforting than angular shapes (Jiang et al., 2016). Due to this, it could be said that because native speakers find their native language to be comforting, they could be more inclined to pick circular shapes which are comforting as well.

Hypotheses

Based on the review of the literature as well as further theoretical research, 2 hypotheses have been formulated. H1 predicts that compared to non-native speakers, native speakers are more likely to choose products of circular packaging. H2 predicts that compared to non-native speakers, native speakers are more likely to choose products that contain logos with movement.

In terms of scope and focus, this Thesis lies within the context of marketing, consumer behavior, and modern language. The primary independent variable, native vs. foreign language, is applicable to marketing and consumer behavior. This is because a vast majority of consumers speak at least two languages (Vince, 2016). Marketers must know these consumers well and should understand how they perceive the world because consumers may

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perceive their advertising tactics differently based on the language that they are using at the time. Consumers' purchase decisions can also depend on the language they are using to think at a given time. The primary dependent variable, consumer visual perception, and its sub-components, shape and movement, also belong to the field of marketing and consumer behavior. Consumers may process and perceive visual stimuli differently, and marketers may create different marketing mixes based on these visual components. This work also falls within the scope of modern language for the reason that native and foreign language are both parts of the study of linguistics.

Additionally, this work relates to existing research because it covers native vs. foreign language effects and visual perception, which are both previously-researched topics. However, prior to this Thesis, these topics have been researched separately. To my current knowledge, there was no research that had examined the effects of language (native vs. foreign) as antecedents of visual perception. Therefore, the work of this Thesis fills this gap not only by adding to the existing literature on foreign language effects, but also by adding to literature on visual perception. The findings of the experiments can be a helpful resource for marketers when they are aiming to serve bilingual or multilingual markets. Knowing what type of visuals (i.e., low movement vs. high movement, angular vs. circular) will be most effective when included in marketing communications and packaging is also crucial to gaining customers. As discussed above, this area of research is worth investigating as it contributes both theoretically and practically. The theoretical and practical contributions will be discussed further within the General Discussion portion of this paper.

METHOD

To test hypotheses H1 and H2, two studies were carried out. The goal of the first study was to examine the proposed effect within the English language, while the goal of the second study was to examine the proposed effect within the Spanish language. In each study, two experiments were conducted with the same general procedure followed for both. The data analysis for the results of both studies was also kept the same by using ANOVA and t-tests.

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Prior to beginning each survey, participants were presented with a consent form informing them of their rights and ensuring that they were comfortable with taking the survey (see Appendix C for consent form). After the consent portion of the survey, participants were asked to verify whether or not they were bilingual. For those who said no, a Skip Logic was added to bring them to the end of the survey as monolingual participants were not needed for this research. For those who said yes, they were then asked if they were native or foreign speakers of the language they were taking the survey in.

In the first part of each study's survey, the effect of native vs. foreign language on movement was tested. Participants were given a scenario in which they were at a movie theater and seeking to purchase popcorn. The employee offered them two different containers of popcorn (see Appendix A for stimuli). Option 1 had static features, while Option 2 had moving features. The participants were informed that the volume, price, and contents of both options were the same. Next, they were asked to evaluate the two options. They first evaluated which option was more attractive, and then went on to choose which option made them happier using a 7-point unnumbered scale (1= Definitely Option 1; 7= Definitely Option 2). Then, they were asked to provide the reasoning for their selection in a short writing task.

In the second part of each survey, the effect of native vs. foreign language on shape was tested. Participants were given a scenario in which they were shopping for soup. While doing so, they saw two different packages for the same exact soup on the shelf (see Appendix B for stimuli). Option 1 had angular packaging, while Option 2 had circular packaging. The participants were once again informed that the volume, price, and contents of both options were the same. Next, they were asked which option they would be more likely to choose on a 7-point unnumbered scale (1= Most likely to choose Option 1; 7= Most likely to choose Option 2).

After answering all the questions about the stimuli, participants in both studies were asked demographic questions. Aside from demographic questions asking about information such as age or gender, the surveys also included questions asking how long the participants were

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learning or speaking the language, what country they were currently in, and what country they grew up in. Each survey ended with the final 2 demographic questions which sought to figure out if participants paid closer attention to the products they were purchasing if they were in their home country speaking their native language, or a country where their foreign language was spoken. The purpose of including demographic questions in each study was not only for data analysis, comparison, and segmentation, but also to provide a pathway for possibilities for future research. A full list of the survey questions asked, including demographic questions, can be found in Appendix D.

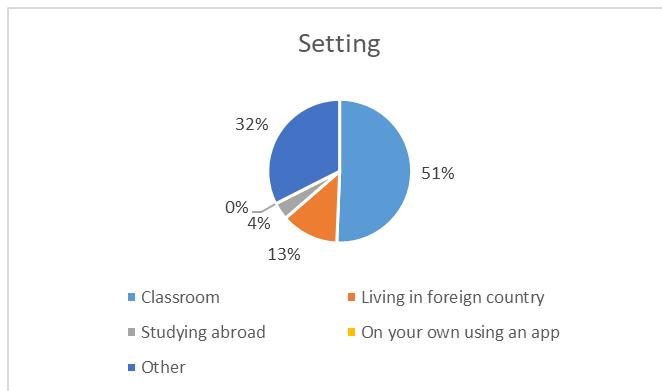
Study 1

The purpose of Study 1 was to test the proposed effect within the English language. 80 participants participated in this study. Over half of these participants were between the ages of 18 and 24 (57% 18-24, 17% 31-40, 14% 41-50, 8% 50+, and 4% 25-30). The majority of the participants in this study were female (70% female, 29% male, 1% other). In terms of the setting where the participants learned their foreign language, most participants learned it in a classroom setting (51% classroom, 32% other, 13% living in a foreign country, 4% studying abroad). The aforementioned demographics are shown in the following graphs:



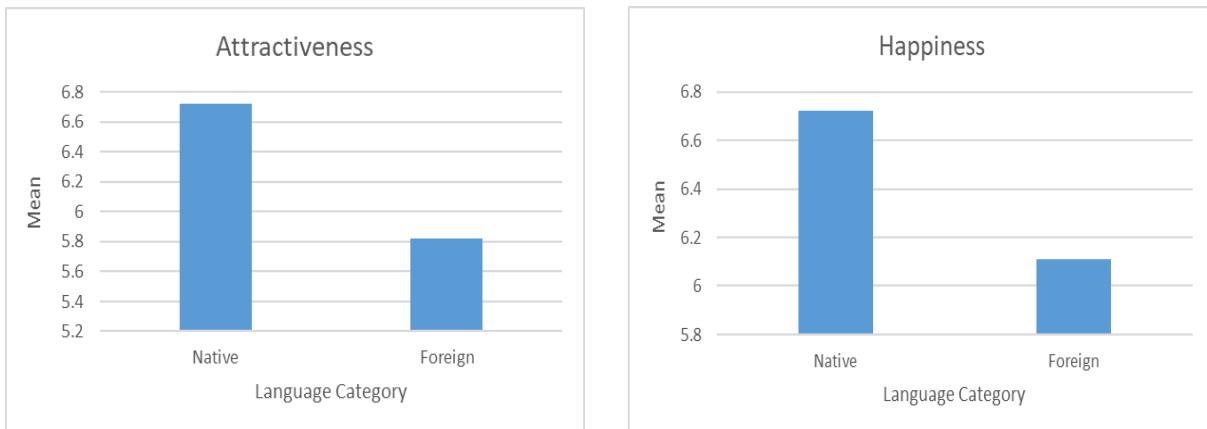
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Results

Movement



In terms of the first study, it appeared that relative attractiveness and relative happiness were statistically significant. Native participants perceived the container with a moving logo to be more attractive ($M = 6.72$) than the foreign participants ($M = 5.82$; $F (1, 78) = 8.00, p = .006$). Native participants were also made happier by the container with a moving logo ($M = 6.72$) than foreign participants ($M = 6.11$; $F (1, 78) = 3.98, p = .049$).

Since the moving logos that were used involved smiles, this raised the question of whether or not emotions played a role in the overall effect. To account for this potential issue, I analyzed the answers given by the participants which described their reason for making their specific container selection. From this analysis, I created a control variable for emotions. If the

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participants' reasoning for selecting one option over the other mentioned any emotions, I coded this variable as "1". If the responses did not mention emotions, I coded them as "0". In order to control for emotions in this study, I conducted ANCOVA and used emotions as my covariate. After conducting this ANCOVA test, it was found that the effect of language was still significant ($F(1, 77) = 7.90, p = .006$). Therefore, emotions did not play a factor in the proposed effect.

Although emotions did not play a role in the effect, participants were motivated by other factors when making their decisions. These factors included things such as perceived differences in quality that came with the difference in a moving vs. static logo, aesthetic, appetite, and the contents inside the bucket of popcorn.

Shape

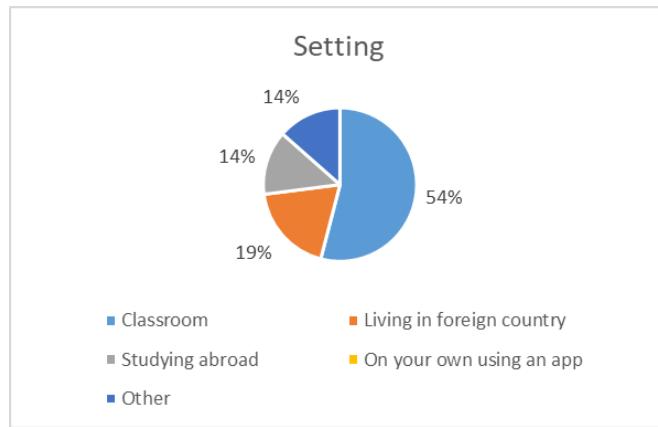
While no data appeared to be statistically significant in terms of shape, there were 2 areas that were marginally significant. Native participants were more likely to purchase circular-packaged items, and they were also made happier by the circular packaging as well. This information supports the H1 and H2 hypotheses.

Study 2

The purpose of Study 2 was to test the proposed effect within the Spanish language. Study 2 followed the exact same procedure as Study 1 with the only difference being the utilization of the Spanish language as opposed to the English language. Approximately 56 participants participated in this study. Over ¾ of these participants were between the ages of 18-24 (79% 18-24, 13% 50+, 5% 41-50, 3% 31-40). The majority of the participants in this study were female (71% female, 29% male). In terms of the setting where the participants learned their foreign language, most participants learned it in a classroom setting (54% classroom, 19% living in a foreign country, 14% studying abroad, 14% other). The aforementioned demographics are shown in the following graphs:

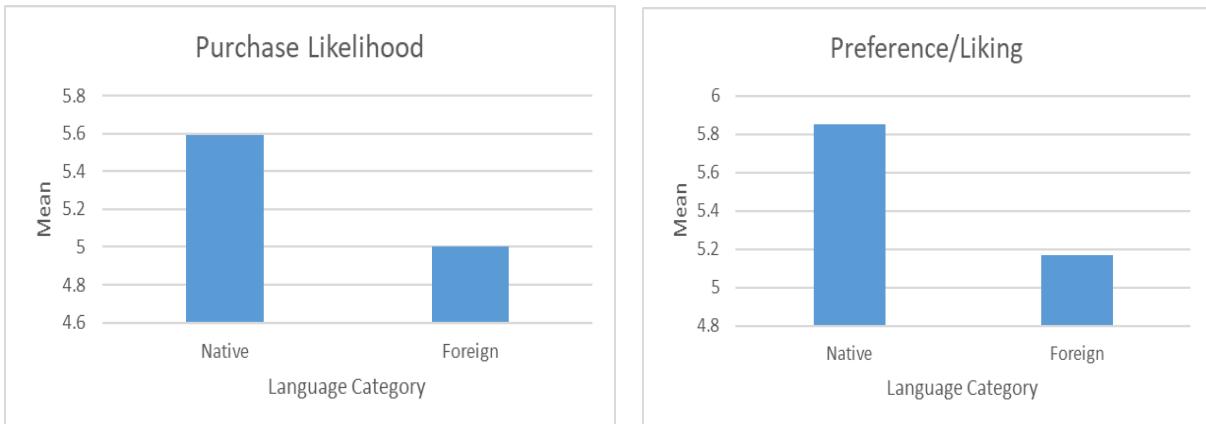
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Results

Movement



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Within the second study, it appeared that purchase likelihood and liking of the product were marginally significant. Native participants were more likely to purchase the container with a moving logo ($M = 5.59$) than the foreign participants ($M = 5.00$; $F (1,54) = 1.18, p = .282$). Native participants also liked the container with a moving logo more ($M = 5.85$) than the foreign participants ($M = 5.17$; $F (1,54) = 1.56, p = .217$).

Shape

No data within shape was neither significant nor marginally significant. Therefore, shape shall not be discussed for this study.

GENERAL DISCUSSION

Summary of the Findings

One major finding of this research was that native speakers prefer moving logos as opposed to static logos. Another major finding of this research was that native speakers prefer circular packaging as opposed to rectangular. These findings show that the language a consumer is thinking in can affect the choices they make throughout the consumer decision process. A native speaker of Language X will likely not make the same purchase decision as a foreign speaker of Language X. However, if both consumers do make the same purchase decision, they would be motivated by different factors. In summation, both movement and shape are critical aspects of visual perception which marketers must keep in mind when releasing their products to the public.

Limitations

The biggest limitation in this research was the constraint of sample size. As this research was seeking out participants who had to meet very specific criteria, this narrowed down the pool of potential participants. Therefore, the sample sizes of the English group and the Spanish group were not exactly even.

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Another impactful limitation which affected this research was the lack of incentive. Participants were not provided with any incentive to take the surveys, and therefore did not always take their time with their answers. It was evident that some responses where participants had to bubble in answers could have been rushed, as the selected bubbles followed a pattern of a straight line going from top to bottom.

A third limitation which was of importance was the level of language expertise. The level of language mastery was not explicitly stated in either survey. Participants were deemed bilingual and even asked how long they had been speaking or learning the language, but this was not constant as the participants ranged from extensive knowledge of the language to minimal.

Other potential limitations could have been the soup packaging and the varying definitions of the different stages of life. In terms of soup packaging, many respondents stated that their underlying reasons for selecting one soup over another was the fact that they were more familiar with the circular packaging as opposed to the angular packaging. Therefore, the effect could have occurred due to the familiarity and comfort level with circular packaging as opposed to an actual preference for circular packaging. In terms of the different stages of life, I deemed the stages to be childhood, adolescence, young adulthood, etc. However, people may hold different opinions about the definitions of each of these age categories and may therefore group themselves differently. Due to this, the evaluation of the demographics could potentially be less accurate.

Theory Contribution

As mentioned previously, the findings of this research contribute to literature about visual perception and language effects. Prior research did not attempt to connect language constructs and visual perception (to our knowledge), but the results from both Study 1 and Study 2 prove that the two areas were successfully connected.

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Practical Contribution

The findings of this research also provide insights to international marketers that can assist them in developing their marketing mixes. Since the data shows that native speakers of a language prefer movement, marketers can use this information when targeting a market that consists of primarily native speakers. In this case, moving logos can be added to products which would then enhance their attractiveness in the eyes of the native consumers. If marketers are targeting a mostly foreign market, and they are aware that foreign speakers prefer less movement, they can ensure that static logos are added to the products geared towards these consumers.

Future Research

The nature of this research opens up the floor to many possible pathways for future research. One potential area for future research could be if the level of language knowledge affects consumer's visual perception. Would the results differ if a foreign participant was, for example, a fluent foreign language speaker as opposed to a beginner foreign language speaker? The results could also differ depending on the number of languages a participant knows or studies. This begs the question of whether or not the number of languages one speaks changes how visual stimuli are perceived.

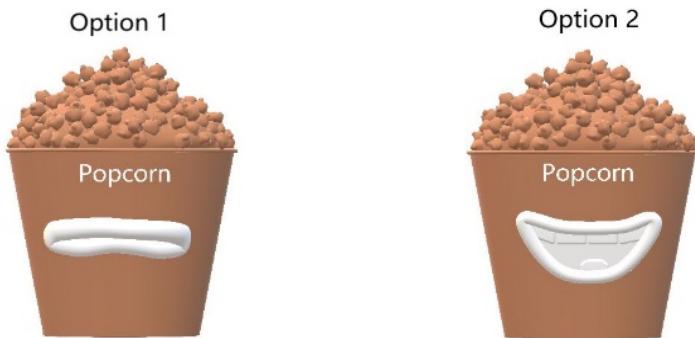
Additionally, it is worth diving deeper into the areas of language and culture to assess if a specific country culture could affect visual perception. For example, would a native Spanish speaker perceive visual stimuli the same way as a native English speaker? As these cultures differ widely, it would be worth researching.

Other components of visual perception could also be studied. Since this research only addressed movement and shape within visual perception, it could be highly valuable to test whether other components like color, size, or location of stimuli had similar effects. A guiding question for this pathway of research could be how the language a consumer is thinking in (i.e. native vs. foreign) affects their preference for light vs. dark colors in visual stimuli.

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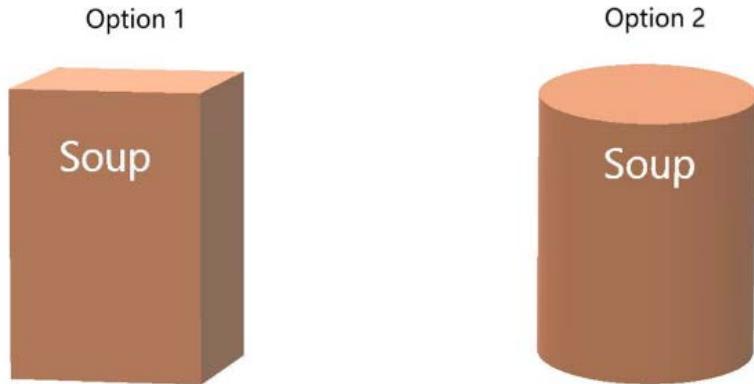
APPENDICES

Appendix A – Movement Stimuli (Less Movement vs. High Movement)



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Appendix B – Shape Stimuli (Angular vs. Circular)



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Appendix C – Consent Form Text

You are invited to participate in a study of visual perception. We hope to learn how you perceive visual stimuli. You were selected as a possible participant in this study because you are 18 years or older and you are bilingual.

If you decide to participate, we will conduct an experiment involving the following procedures:

This study may contain different tasks such as reading scenarios and answering questions. This study will take up to 5-20 minutes. There is no risk in participating in this study beyond those experienced in everyday life.

Any information obtained in connection with this study will remain confidential and will not be disclosed to the general public in a way that can be traced to you. In any written reports or publications, no participant other than the researchers will be identified, and only anonymous data will be presented.

Your participation is totally voluntary, and your decision whether or not to participate will not affect your future relations with Bryant University or its employees in any way. If you decide to participate, you are also free to discontinue participation at any time without affecting such relationships. However, it is requested that you notify the investigator of this.

If you have any questions, please contact Gabriela Reymont at (860) 490-1949 or greymont@bryant.edu. If you have any additional questions later, we will be happy to answer them. You can have a copy of this form to keep.

Please click the button below to continue if you have decided to participate. Clicking the button indicates only that you are at least 18 years of age, and have read the information provided above. Clicking the button does not obligate you to participate and you may withdraw from the study at any time without consequences.

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Appendix D – Questionnaire Text

Q1- Are you bilingual or have you studied a language other than your native one?

Q2- Is English your native language?

Q3- You are going to see a movie at your local cinema. You decide you want to buy popcorn for a snack. The employee presents you with 2 options: Option 1 and Option 2. The amount of popcorn, price, and contents of each container are identical.

Q3a- Which container are you more likely to purchase?

Q3b- Which one do you like more?

Q3c- Which one do you find more attractive?

Q3d- Which one are you more likely to enjoy?

Q3e- Which one makes you happier?

Q4- When you think about the choice task that you completed earlier:

Q4a- How easy was it to choose between the two options?

Q5- How did you feel when you were choosing between the two options?

Q6- Think about your popcorn options. What is the reasoning behind your selection? Please summarize in about 1 sentence.

Q7- You are shopping for soup at your local supermarket. While doing so, you come across 2 different packages for the same exact soup. The volume, price, and contents of each package are identical.

Q7a- Which container are you more likely to purchase?

Q7b- Which one do you like more?

Q7c- Which one do you find more attractive?

Q7d- Which one are you more likely to enjoy?

Q7e- Which one makes you happier?

Q8- When you think about the choice task that you completed earlier:

Q8a- How easy was it to choose between the two options?

Q9- How did you feel when you were choosing between the two options?

Q10- Think about your soup options. What is the reasoning behind your selection? Please summarize in about 1 sentence.

Q11- What is your age?

Q12- Which gender do you identify as?

Q13- How long have you been speaking English?

Q14- How long have you been speaking or learning your foreign language?

Q15- In which country is your current home located?

Q16- In which country did you grow up or spend your childhood?

Q17- How many languages are you fluent in? List them below.

Q18- In what setting did you learn your foreign language?

Q19- Do you possess another native language in addition to the one you have already stated?

Q20- When making purchase decisions, how important is the shape of packaging to you?

Q21- When making purchase decisions, how important is the logo on the item to you?

Q22- Rate the accuracy of the following statement: When I am in my home country where my native language is being spoken, I look closely at the products I am purchasing before I make my purchase decision.

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Q23- Rate the accuracy of the following statement: When I am in a foreign country where my foreign language is being spoken, I look closely at the products I am purchasing before I make my final purchase decision.

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