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ABSTRACT

Between technological developments in the car industry and increasing interest in eco friendly products among consumers, eco-friendly cars are gradually entering consumers' sights. This study examines the factors that influence consumers' attitudes toward the adoption of eco-friendly cars. This study conducted an online survey with a sample (N = 3,191) collected through a national panel (Dynata). The results demonstrate that consumers' concern about environmental sustainability and attitude towards environmentally friendly products impact consumers' attitudes toward eco-friendly cars. It was also found that consumer's level of collectivism positively influence their attitude toward environmentally friendly products. Further, the results showed consumers' attitudes toward ecofriendly products differs across ethnicities; Asian Americans were found to have the most positive attitude towards eco-friendly cars, followed by Hispanics. Finally, it was found that ecofriendly consumers tend to also think that fuel mileage productivity, car design, and high technology are important cars' features.

INTRODUCTION

The huge machines that emit tons of carbon dioxide as well as other gas polluting the air has changed human history dramatically during the first industrial revolution, a good way as well as in a bad way. It has been more than 200 years from that historical turning point and human has realized that, along with the benefits of those machines, the mother earth has been damaged. Therefore, environmental sustainability has become a must-to-be-considered factor while developing new technologies. The environmental sustainability is defined as a

condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity (Morelli, 2011). Among all modern technologies that generate pollution to the air, transportation sector is responsible for over 55% of NO_x total emission of inventory, less than 10% of VOC_s emission, and less than 10% of $PM_{2.5}$ and PM_{10} emissions in the U.S (EPA 2014). Fortunately, as technology evolves in the car industry, consumers started to put more effort on the development of eco-friendly cars. According to the United State Environmental Protection Agency, eco-friendly cars are defined as cars that emit a reduced amount of carbon compounds and other harmful gases by running on either electricity, a combination of electricity and gasoline, or fuel cells that run on pressurized hydrogen (EPA, 2017). A recent report from Automotive Executives Worldwide stated that, among 981 automotive executives surveyed from around the world, the second, third, and fourth most important trends in the car industry all related to the development and improvement of hybrid and electric cars (KPMG, 2019).

On the other hand, in 2018, there was an increase of 81% in electric car sales over 2017, making this the highest growth rate in several years and an indicator to the car industry that the popularity of hybrid and electric cars is growing (Pyper, 2019). Although eco-friendly car is a relatively new topic, the interest of understanding environmental consumerism and the awareness of green marketing has started and has been growing in the past few decades (Cherian, J. & Jacob, J. 2012). However, there is only a few studies focusing on the attitude toward eco-friendly cars and the factors influencing the consumers' attitudes across ethnic groups. This study fills this gap by comparing the impact that environmental concern, eco-friendliness and collectivism play on attitudes toward an eco-friendly product across ethnic groups. That is, this study explores the influencing factors favoring attitudes toward ecofriendly cars among Non- Hispanic Whites, African Americans, Hispanics, and Asian American in the US.

LITERATURE REVIEW
Eco-Friendly Products
Eco-friendly products are the result of consumer's concern about environmental sustainability (Cherian, J., & Jacob, J. 2912). Eco-friendly products are defined as products that do not harm the environment in any stage of their existence, from production to disposal (Holzer, 2018). Different companies worldwide now offer products that include materials or components that reduce environmental impact. For example, Ford Motor Company recently changed the fabric in its car seats to include 25% more recycled yarn in most of their cars, with their hybrid cars featuring interiors made entirely of recycled fabric (Gershoff, A. D., & Frels, J. K., 2015). It is important to note that by changing one component or attribute to be more eco-friendly, the entirety of the product is not necessarily made to be eco-friendly; manufacturers will often improve the environmental impact of one attribute while ignoring others, and consumers can be led to believe that the whole product is eco-friendly when in fact only one small component of the product may be so (Zink & Geyer, 2016). Regardless, the importance of eco-friendly products cannot be dismissed due to their ability to reduce harmful side effects, reduce hazards, reduce toxic substances, reduce health related issues, to be recycled, and to improve environmental friendliness (Gershoff, A. D., & Frels, J. K., 2015). Due to this importance, societies around the globe are beginning to incorporate eco-friendly practices into many facets of everyday life, especially in the transportation sector. There are more and more eco-friendly cars emerging from different companies in response to the demand for lowered carbon monoxide emissions. Cars like hybrids and

electric cars are especially becoming popular among consumers due to consumers' desire for safe, fuel efficient, environmentally friendly, and technologically equipped cars (Barry, M., & Damar-Ladkoo, A., 2016).

Although it is a trend for companies to provide environmentally friendly products, marketers still need to understand how consumers use and relate to eco-friendly products. Studies have found that consumers stereotype those who consume eco-friendly products, and both men and women consider engaging in green behaviors (e.g. purchasing eco-friendly products or preferring eco-friendly branding) as being feminine (Brough et al., 2016). Even those who engage in such green behaviors also perceive themselves in the same way (Brough et al., 2016). This could be an obstacle for marketers to expand the market share of an eco-friendly product since males who want to retain their masculinity will hesitate when purchasing eco-friendly products (Brough et al., 2016).

Despite the concern of gender image when purchasing eco-friendly products, consumers' beliefs also play an important role in eco-friendly purchase decisions. Fellow and Jobber's (2000) research revealed that individuals who felt that the environmental consequences of purchasing a specific product are important were more likely to purchase eco-friendly products. In addition, in another study, Urien (2011) stated that individuals who score high on generativity, which denotes a higher level of concern for others, are more likely to have eco-friendly purchase intentions and more environmentally responsible consumption behaviors.

Looking specifically at eco-friendly cars, several challenges and opportunities exist as the global trend toward more eco-friendly products grows. According to a Mintel consumer report, 87% of consumers have never owned a hybrid or electric car (Mintel, 2018). One reason for this is the cost of the cars. Households with higher incomes are more likely to have owned a hybrid or electric car before or to currently own one. Specifically, consumers with an income of $75,000 or more per year are more likely than lower-earning consumers to own a hybrid or electric car (Mintel, 2018). Because higher-earning households are more likely to own hybrid or electric cars, they are also more likely to earn a $7,500 tax credit that is offered on plug-in battery cars. Lower income households may not be able to take full advantage of this opportunity, and income level stands as a staunch barrier between low-income households and eco-friendly vehicles (Mintel, 2018). Lastly, according to this report (Mintel, 2018), 47% of current owners of a hybrid or electric car consists of Millennials compared to Baby Boomers at 24%.

Environmentalism

Over the last decade, consumers generally have cared more about the rise of environmental protection movements and the impact of varieties of pollutions (Laroche et al. 2001). As a result, environmentalism has matured into a significant social issue, and the demand for eco-friendly products is growing rapidly (Reints, 2019). Not surprisingly, environmentalism has become a criterion influencing consumer purchase behavior. Tahir Albayrak and his colleagues conducted a study aimed at investigating the influence of environmental concern on green purchase behavior. The study (Tahir, A., & Şafak, A., & Meltem, C., 2013) shows that environmental concern is a determinant of environmentally-conscious consumer behavior, and positively affects consumer behavior. Similarly, other studies have shown that consumers pay attention to the ecological image of brands and, at the same time, adjust their purchase behaviors in a way to support those businesses that convey a positive and ethical image in favor of the environment (Yu Shan Chen, & Ching Hsun Chang, 2012).

Environmental consciousness motivates consumers to make purchasing decisions that are greener, and these consumers in turn are more likely to change their purchasing behavior to improve the environment and are often willing to pay more for eco-friendly characteristics (Patricia, A., 2012). As a result, environmentalists, or consumers who have environmental consciousness, could be the prime target market for eco-friendly products.

Green marketing has experienced tremendous transformation as a business strategy since the 1980's and has created positive changes in consumers' concerns for the environment (Dinuk, A. & Rashad, Y., 2013). Consequently, companies now increasingly concentrate on green marketing because they have realized the importance of it as a means of gaining a competitive advantage in the industry (Moravcikova, et al. 2017). When looking at the transportation industry, the electric vehicle is regarded as a promising transportation alternative since it utilizes renewable energy sources to reduce greenhouse gas emissions (Kenan, D. & Michael, H. B., 2017). Therefore, individuals who value environmental issues (such as global warming, air quality, and climate change) indicate stronger reflections of environmentalist identities in electric cars, and this in turn leads to a stronger intention to purchase electric cars (Lee, V. W., & Nichole, D. S., 2017).

Green Purchase Behavior and Ethnicity

Barbara Mueller (2008) defines ethnicity as a sizable group of individuals which shares a common cultural, racial, religious, or linguistic heritage. Previous studies have shown that ethnicity and demographic factors have influence shopping patterns (ei. Kim, Laroche, & Joy, 1990; Korzenny, Chapa, Korzenny, 2017). However, little research has been done into the influence of environmental concerns, and eco-friendliness on purchasing behavior across ethnic groups, or the likelihood of different ethnic groups to purchase eco-friendly cars. Studies have also shown that consumers are often drawn to ethnic products and/or products that connect with their cultural values and beliefs (Kim, et al., 1990; Hyun, 2018). In the case of cultural values, the intention of buying an eco-friendly car, as an act of green purchase behavior, has been found to be positively influenced by collectivism, for instance (Sharma, K. & Aswal, C. 2017). Collectivism is described by Hofstede (1984) as a cultural dynamic wherein consumers belong to in-groups or collectives which are supposed to look after them in exchange for loyalty. This predilection to in-group loyalty and concern for others means that higher levels of collectivism lead to stronger linkages between environmental attitude and green purchase intention (Sharma, K. & Aswal, C. 2017).

THEORIES AND HYPOTHESES DEVELOPMENT

Social Cognitive Theory

Social cognitive theory defines human behavior as a dynamic and reciprocal interaction of personal factors and environment influences (Bandura, 1986). According to Bandura (1986), individuals navigate a set of lived experiences as they meet and respond to stimuli through individual behaviors. As they respond to stimuli, individuals are necessarily engaging with an external environment which is made up of social contexts within which the individual and their behaviors are situated (Bandura, 1986). Within this environment, individuals may find reinforcement, for instance, which is one of the more vital concepts of the social cognitive theory (Bandura, 1986). Reinforcements can be defined as the internal or external responses to a person's behavior that affect the possibility of the behavior becoming or being persistent (Bandura, 1977b). Although reinforcements can be self-initiated, the environment can have a significant impact on them as well, and the resultant impact of these either self-initiated or environmental reinforcements can be positive or negative (Bandura, 1977b).

When the social cognitive theory was applied to the case of environmental sustainability, eco-friendly product and eco-friendly cars, the lived experience may refer to the existing knowledge of environmental problem and eco-friendly product. Previous knowledge and attitude may influence consumer's attitudes toward eco-friendly products. The environmental concern is one way to show the knowledge that individual has regarding the environmental sustainability. According to Ivan et al (2015), environmental concern is defined as the degree to which consumers are aware of environmental problems and support efforts to solve these problems or express a willingness to contribute personally to the solution. Therefore,

consumer's existing knowledge about environmental sustainability-related problems as well as their willingness to contribute personally to pay more to protect the environment are expected to affect consumers' attitudes toward eco-friendly cars. Thus, the following two hypotheses are proposed:

H1: Consumers' awareness of environmental sustainability-related problems affects consumers' attitudes toward eco-friendly products.

H2: Consumers' willingness to pay more for environmental protection affects consumer's attitude toward eco-friendly products.

In addition, the literature about ecologically concerned consumers suggests that previous attitudes toward green products affects consumer attitudes towards the brand (Schwepker & Cornwell, 1991). Therefore, it is expected consumers' existing attitude towards eco-friendly products can create either negative or positive reinforcement to their attitude towards eco-friendly cars. So, the following hypothesis is proposed to corroborate this assumption:

H3: Consumers' attitudes toward eco-friendly products affects consumers' attitudes toward eco-friendly cars.

Collectivism as a cultural value

Collectivism as cultural values will drive consumers to believe more in consumer effectiveness, which refers to the extent to which individuals believe that their actions make a difference in solving a problem (Ellen, Weiner, and Cobb-Walgren, 1991), and thus influence consumer's green product buying behavior (Kin, Y. & Choi, S.M., 2005), thus it is expected that high collectivist consumers will be more prone to have a positive attitude toward eco-friendly products. In addition, levels of collectivism vary across ethnic groups (de Mooij, M., & Beniflah, J. 2017), so difference among Non-Hispanic White, HIspanics, African American/Black, and Asian Americans, are expected. Therefore the following hypothesis and research question are proposed:

H4: Consumer's levels of collectivism affects the attitude towards eco-friendly products

RQ1: Does consumers' attitude toward eco-friendly car differ across ethnic groups?

Diffusion of Innovation theory

Diffusion of Innovation Theory explains how an idea or product gains momentum and diffuses through a specific population or social system (Rogers, 2003). Simply put, the result of this diffusion is that consumers, as part of a social system, adopt a new idea, behavior, or product (Borracci, 2018). According to Rogers (2010), the diffusion of innovation hinges

upon five perceived characteristics of the innovation: relative advantage, compatibility, complexity, trialability and observability. The presence or absence of any of these characteristics influences the persuasion stage of the innovation decision process wherein an individual forms a favorable or unfavorable attitude towards an innovation. In Yoo's (2018) research on adoption of drone delivery, the researchers examined only three characteristics out of five— the relative advantages, complexity, and compatibility of the innovation— because several studies have found that only these three are related to innovation adoption (Agarwal and Prasad, 1998; Kang et al., 2015; Tornatzky and Klein, 1982). For the relative advantage, the researchers tested whether the speed advantage and environmental friendliness advantage have a positive effect on attitude (Yoo et al., 2018). For the complexity, the researcher tested whether the consumer's perception of complexity of drone delivery will affect attitude toward drone delivery (Yoo et al., 2018).

Similarly, this study focuses on the relative advantage and compatibility characteristics of eco-friendly cars as those characteristics relate to consumer attitudes and intentions. The attributes that are tested include technology, fuel mileage, safety, price, speed, size, design, performance, eco-friendliness and brand name. Technology refers to the technology features on cars (i.e. navigation, touch screen). Fuel mileage refers to the fuel economy feature of the car (usually measured as miles per gallon). Safety refers to the active and passive safety feature on the car (i.e. Airbags, Auto Crouse Control). Price refers to the money that consumers need to pay to acquire the right to use the car (i.e. buying or leasing the car). Speed refers to the top speed and acceleration ability of the car (usually measured as how many second to get from 0 mph to 60 mph). Size refers to the overall size of the car, as well as the interior size (i.e. backseat size and trunk size). Design refers to the aesthetic value of the design of the car's exterior and interior. Performance refers to the control and durability of the car. As mentioned, these attributes were chosen due to their providing relative advantage and their being compatible with consumers' current conceptions.

According to Rogers (2010), the relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes. Considering the fact that consumers focus on different attributes, such as price, safety, etc., when purchasing a car, the goal is to identify what attributes can be seen as car advantages that lead to a positive attitude towards eco-friendly cars. The second characteristic is compatibility, as Rogers (2010) defined in his article, is the degree to which an innovation is perceived as consistent with the existing value, past experiences, and needs of potential adopters. In this case, although the "technology" and "fuel mileage" attributes seems like to have relative advantages as compared to traditional gasoline cars, there is no related literature confirming it. In addition, the "safety" attribute was considered as one of the top three features in the circumstance of normal fuel-using cars. (Kassim, K. et al. 2016). In addition to the eco-friendly attribute, this study explores which car attributes are preferred by eco-friendly consumers. Thus, the following research question is investigated:

RQ2: What kind car's attributes are preferred by consumers with high levels of attitudes toward eco-friendly cars when comparing "technology", "fuel mileage" "safety" "price", "speed", "size", "design" and "performance" "eco-friendliness" and "brand"?

Figure-1*: The relationship between variables

A conceptual model is shown in Figure 1 summarizing the proposed hypotheses. Environmental friendliness and willingness to pay for environmental protection influence attitudes toward eco-friendly products. Collectivism also influence the attitude toward eco-friendly product. In addition, attitudes towards eco-friendly products influence attitudes toward eco-friendly cars.

RESEARCH DESIGN

Methodology

This research applied a quantitative design using an online survey through a national panel. The data was collected by the Center for Hispanic Marketing Communication at FSU in collaboration with the Dynata Research Company. Participants were asked to report their basic demographic information including gender, age, and ethnicity. The pre-qualifying questions were about participants' possession of cars and appreciated car attributes. Already developed scales were adapted to measure the variables explored in this study. Cronbach's alphas were run to validate each scale. The reliability scores ranged between .88 and .91.

The scale used to measure awareness of environmental problems and willingness to pay more for environmental protection were obtained from Laroche (2002) which was originally used to measure the attitude awareness of environmental problem in Canada. Therefore, minor changes were made to the scale and it was altered to measure the level of environmental concern in the U.S. rather than in Canada. Next, a 5-item scale from Matthes and Wonneberger (2014) was included and slightly modified for the research purpose to measure attitude towards eco-friendly cars. After that, a 6-item scale from Taufique (2014) was presented to participants to measure their attitudes towards eco-friendly products. This scale was originally from Haws, Winterich, and Naylor (2014) and was used because, according to Taufique (2014), it has a high level of reported internal consistency. Last, a six item scale that measures the level of collectivism in individual level was adapted from Yoo, Donthu, and Lenartowicz (2011). Factor analyses and Cronbach's alphas test were run to validate each scale. The factors analysis results indicated all four scales used in the survey were unidimensional with loadings greater than .60. Cronbach's alphas ranged between .88 and .91. indicating an acceptable level of reliability.

Sampling

All responses came from participants aged 18 years old and older. The total sample includes 3181 participants. The demographic distribution of the sample is shown in Table 1. The respondents were spread evenly in each age cohort. There were slightly more female respondents than male, and non-Hispanic white is the dominant ethnic group represented in this sample, followed by Hispanic, African American and Asian American. The majority of

respondents have a degree that is higher than high school degree.

Table 1. Demographics of Respondent

Demographics		Frequencies	Percentage
Age	18-22	558	17.5
	23-29	491	15.4
	30-38	447	14.1
	39-44	354	11.1
	45-54	414	13.0
	55-64	468	14.7
	65 or older	449	14.1
Gender	Male	1419	44.6
	Female	1750	55.0
	Other	12	0.4
Ethnic	Non-Hispanic White	1182	37.2
	Hispanic	704	22.1
	African American/Black	581	18.3
	Asian American	616	19.4
	Other	98	3.1
Education level	Elementary school	8	0.3
	Middle school	37	1.2
	High school	758	23.8
	Some college/ technical school	1046	32.9
	Bachelors/4-year degree	829	26.1
	Post-graduate degree	482	15.2

Data Analysis and Results

In order to test Hypothesis a linear regression test between the average summed index of awareness of environmental problems (independent variable) and the average index of attitude towards eco-friendly products (dependent variable) was run. The results indicates there is a significant ($p = 0.001$, $t = 2.579$) positive (standardized coefficients beta = 0.046) correlation between the awareness of environmental problems and attitude towards eco-friendly products. Therefore, hypothesis 1 is supported. However, the coefficient of determination is relatively weak ($R = 0.046$, $R^2 = 0.002$). To understand the correlation between these two variables, a line graph was generated based on the two variables. (see Figure-3)

Figure 3. Correlation Between Environmental Friendliness and Attitude towards Eco-friendly product
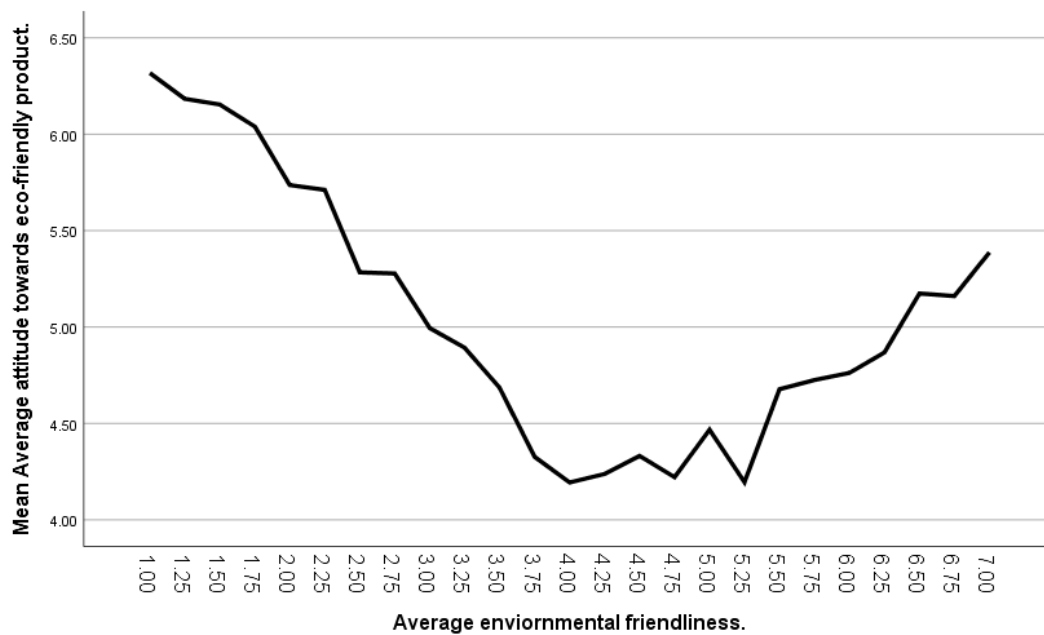
According to the graph, the relationship between the two variables is curvilinear. The first half of the curve indicates that there is a negative correlation, while the second half of the curve indicates a positive correlation. Therefore, two additional analyses on each half of the awareness of environmental friendliness variable were conducted to examine the correlation of each part. The result indicates that there is a significant ($p < 0.001$, $t = -19.757$) negative (standardized coefficients beta = -0.546) correlation between the first half (from the lowest awareness "1" to neutral "4") of the awareness of environmental problems and attitudes towards eco-friendly products. The coefficient of determination of this analysis is higher (R = 0.546, R^2 = 0.298). Further, there is a significant ($p < 0.001$, $t = 20.722$) positive (standardized coefficients beta = 0.375) correlation between the second half (from neutral "4" to highest awareness "7") of awareness of environmental problems and attitudes towards eco-friendly products. The coefficient of determination was also higher here than in the previous analysis (R = 0.375, R2 = 0.141).
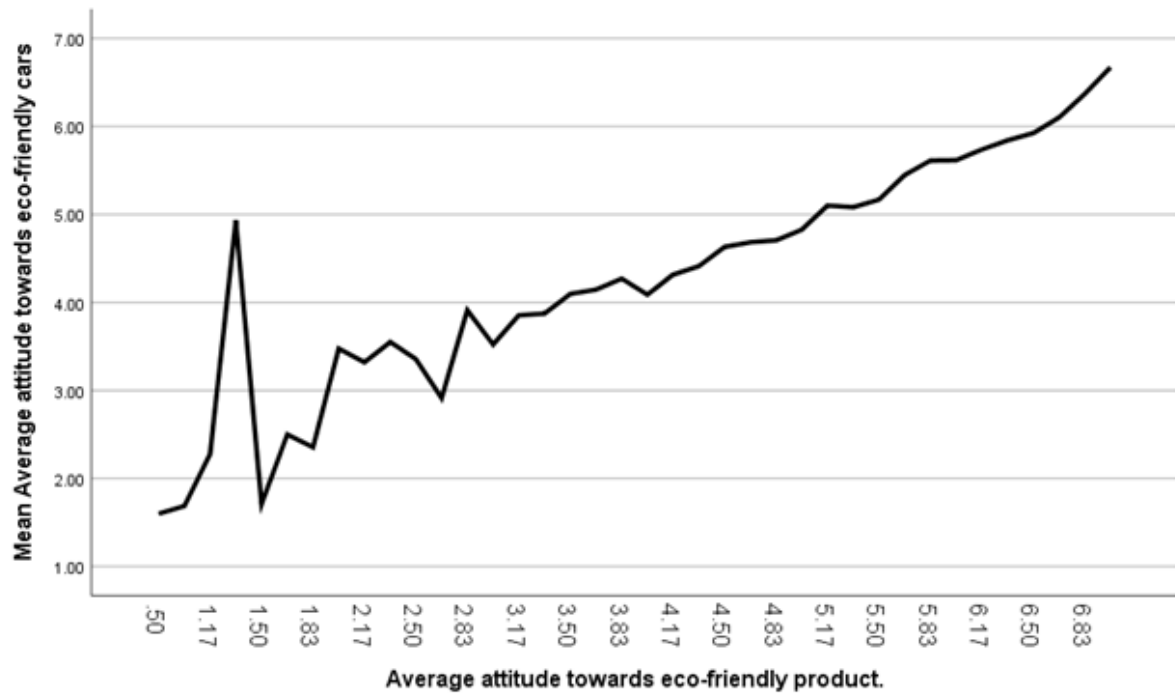
Hypothesis 2 was tested by a linear regression test between the average summed index of willingness to pay more for environmental protection (independent variable) and the average index of attitudes towards eco-friendly products (dependent variable). As the result, there is a significant ($p < 0.001$, $t = 42.047$) positive (standardized coefficients beta = 0.598) relationship between willingness to pay more for environmental protection and attitudes towards eco-friendly products. Therefore, hypothesis 2 is supported. In addition, the coefficient of determination is relatively strong. (R = 0.598, R^2 = 0.357). The line graph (see Figure-4) of these two variables indicates a clear positive linear relationship between these two variables.

Figure 4. Correlation between Willingness of paying more and attitude towards eco-friendly product
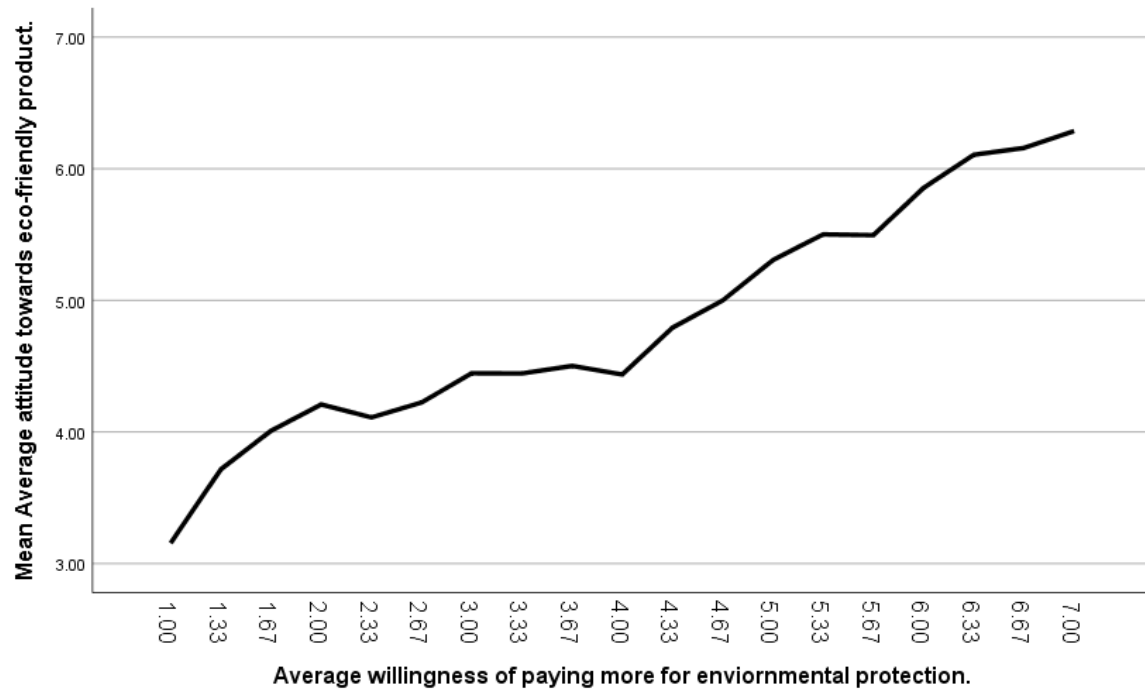
To test hypothesis 3, a linear regression test was conducted between attitudes towards eco-friendly products (independent variable) and attitudes towards eco-friendly cars (dependent variable). Linear regression shows a significant ($p < 0.001$, $t = 50.537$) positive (standardized coefficients Beta = 0.667) relationship between attitudes towards eco-friendly product and attitudes towards eco-friendly cars. Also, the coefficient of determination indicated by the dependent variable accounts for 44.5% of the effect on attitude change. ($R = 0.667$, $R2 = 0.445$). Therefore, hypothesis 3 is also supported. The line graph (see Figure-5) of these two variables indicates a positive linear relationship between these two variables.

Figure 5. Correlation between attitude towards eco-friendly product and eco-friendly car

To test hypothesis 4, a linear regression test was conducted between levels of collectivism (independent variable) and attitude towards eco-friendly products (dependent variable). Linear regression shows a significant ($p<0.001$, t = 49.62) positive (standardized coefficients Beta = 0.664) relationship between levels of collectivism and attitude towards eco-friendly products. In addition, the coefficient of determination indicated by the dependent variable accounts for 44.1% of the effect on the attitude change (R=0.664, R2=0.441). Therefore, hypothesis 4 is also supported. The line graph (see Figure-6) of these two variables indicates a positive linear relationship between these two variables.

Figure 6. Correlation between levels of collectivism and attitude toward eco-friendly products
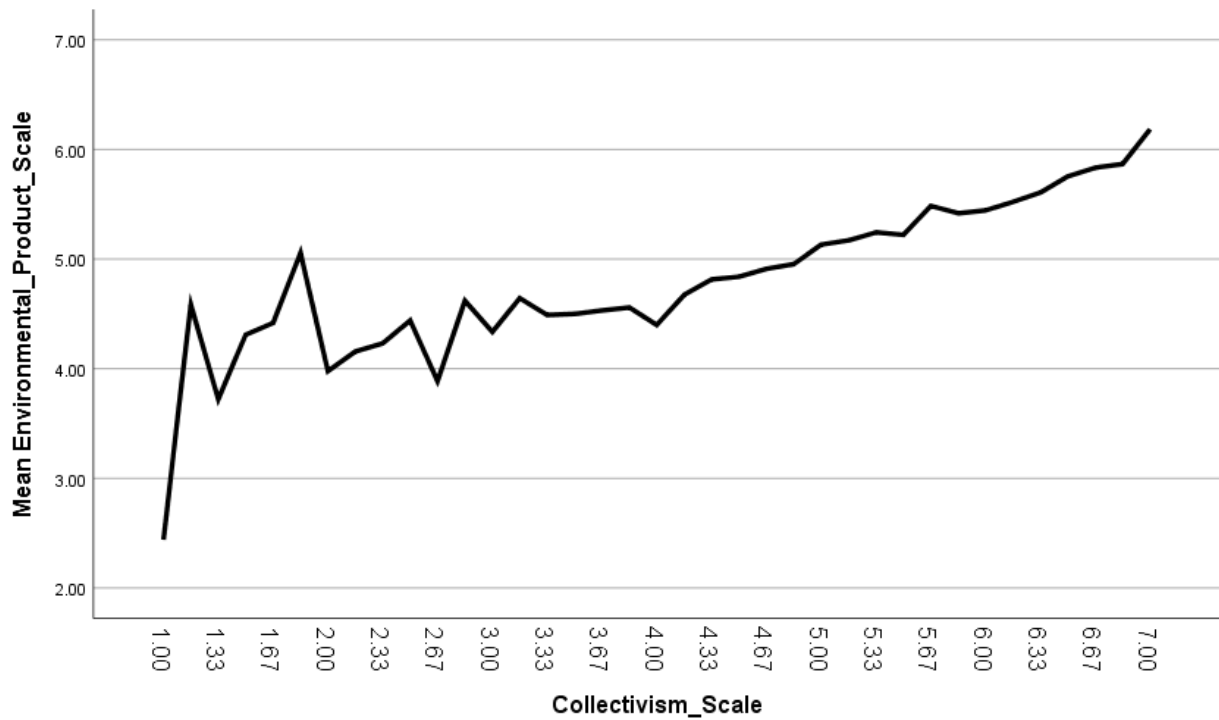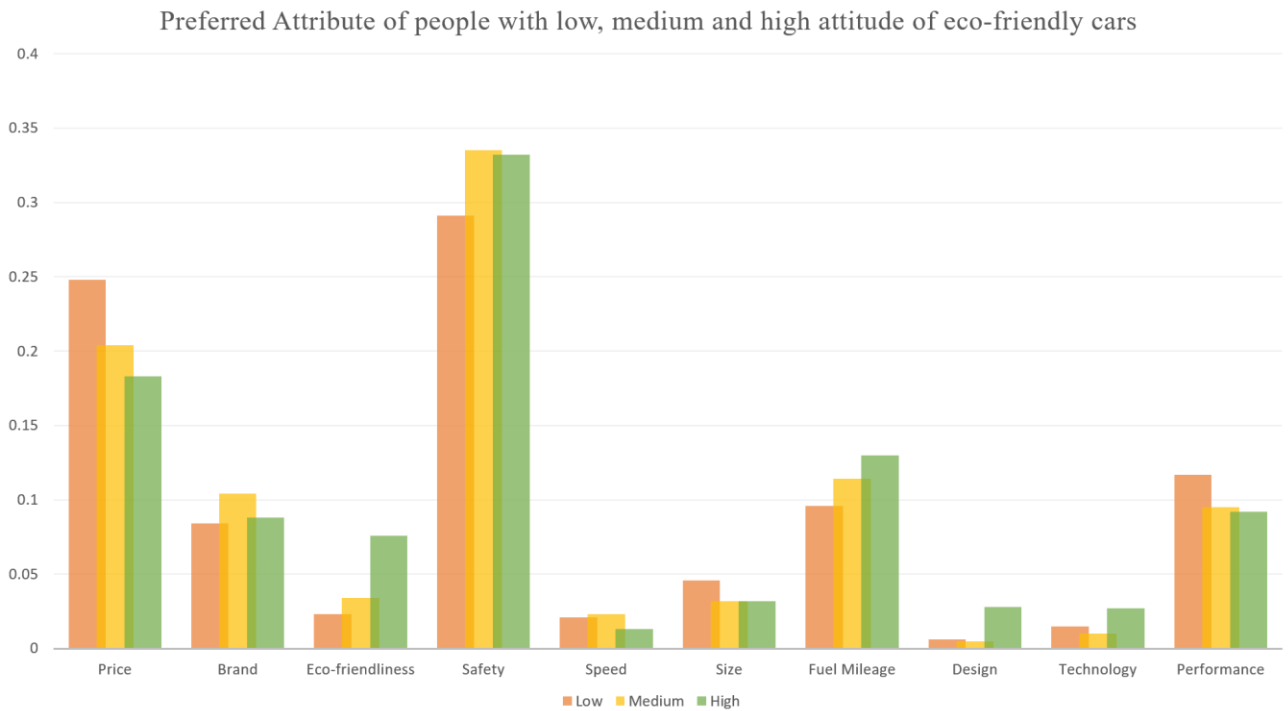
A one-way between-subjects ANOVA was conducted to compare the difference of collectivism between ethnicities. According to the result, there is a significant difference of ethnicities on levels of collectivism at the $p < .05$ level. [$F_{(4,3176)}=6.413$, $p<0.01$]. Tukey Post hoc comparisons revealed that Asian Americans (M=4.66, S.D.= 1.06) reported the highest collectivism among all ethnic groups, which is significantly higher than non-Hispanic White (M= 4.40, S.D.=1.13) and other ethnicity (M = 4.24, S.D.=1.30). Therefore, different ethnic groups do have various levels of collectivism.

To explore whether ethnic group differences exists, a one-way between-subjects ANOVA test was conducted to compare the difference of ethnicity on attitudes toward eco-friendly cars across the four main ethnic groups in the US (Non-Hispanic White, Hispanics, African American/Black, Asian Americans). The results shows that there is a significant difference of ethnicity on attitude towards eco-friendly cars at the $p < .05$ level [$F_{(4,3176)} = 6.139$, $p < 0.001$]. Overall, the findings indicate, Asian Americans have the most positive attitude towards eco-friendly cars, followed by Hispanics. Post hoc comparisons using Tukey HSD indicate that the mean score for Asian Americans (M = 5.03, SD = 1.23) is significantly different than that of Non-Hispanic Whites (M = 4.72, SD = 1.33) and African American/Blacks (M = 4.80, SD = 1.27) ($p = 0.05$), while no significant difference was found between Asian Americans and Hispanics (M = 4.89).

To answer the research question two, a Chi-square test was conducted to test which attributes of cars were preferred by consumers with high attitude toward eco-friendly cars. In order to conduct the test, the sample was clustered into three groups based on the attitude toward eco-friendly car. First group includes respondents with low levels of attitude (scored from 1 to 4.25 in the attitude scale) toward eco-friendly cars (accounts for 36.1 percent of the entire sample size). The second group includes respondents with medium levels of attitude (scored from 4.25 to 5.5) toward eco-friendly cars (accounts for 31.9 percent). The last group

includes respondents with high levels of attitude (scored from 5.5 to 7) toward eco-friendly cars (accounts for 32 percent). According to the Chi-square result, the preference of car attribute varies across different groups at p < 0.05 level (Pearson Chi-Square = 93.8, df= 18, p < 0.01). The comparation of each group was presented in Figure 6. The results shows consumers with high levels of attitude toward eco-friendly cars desire, in addition to the eco-friendliness, attributes related to fuel mileage productivity, good designs and high technology more than consumers from other two groups. See Figure 2.

Figure 2. Comparison of preferred car attributes among low, medium, and high level of attitude toward eco-friendly car

Additionally, a one-way between-subjects ANOVA was conducted to explore whether differences between age groups existed in relation to attitudes towards eco-friendly cars across seven age groups (18-22, 23-29, 30-38, 39-44, 45-54, 55-64, 65 and older). The results indicated that there is a significant difference between age groups on attitude towards eco-friendly cars at the $p < .05$ level [$F(6,3174) = 5.888$, $p <= 0.001$]. Overall, it was found that consumers between 30 and 38 years of age have the most positive attitude towards eco-friendly cars. This means that there is a tendency for younger consumers to have more positive attitudes towards eco-friendly cars than older consumers. See Table 2

Table 2. Age And Attitude towards Eco-Friendly Cars

	N	Mean	Std. Deviation	Std. Error
18 - 22	558	4.9179	1.25514	.05313

23 - 29	491	4.9711	1.24411	.05615
30 - 38	447	5.0009	1.28628	.06084
39 - 44	354	4.8774	1.20997	.06431
45 - 54	414	4.6242	1.39435	.06853
55 - 64	468	4.7427	1.30542	.06034
65 or older	449	4.6829	1.31906	.06225
Total	3181	4.8361	1.29434	.02295

CONCLUSION

This study confirms that the awareness of environmental problems and willingness to pay more for environmental protection both positively influence attitudes towards eco-friendly products. Also, the collectivism level also positively influences the attitude toward eco-friendly product. Moreover, attitudes towards eco-friendly products positively influence attitudes towards eco-friendly cars. The results also show that consumers' attitudes toward ecofriendly cars differ across ethnicities and confirmed that consumers' level of collectivism varies across ethnic groups. Specifically, this study shows Asian Americans have the highest level of collectivism, and the most positive attitude toward ecofriendly cars, and it is followed by Hispanics, African American and Non-Hispanic Whites, in that order. Finally, it was found consumers who have higher attitude on eco-friendly cars tends to think that eco-friendliness, fuel mileage production, car design, and high technology, in that order, are the most important features of a car.

DISCUSSION

The eco-friendly car has become a new trend in the automobile industry. Tesla is no longer the only electric car company in the industry, as most of the large car companies have developed their own eco-friendly cars. For instance, Audi released their full-electrical car Audi e-tron in 2018, BMW announced their plug-in hybrid sports car i8 and i3 in 2014 and 2013 (Edelstein, 2013). According to the results from this study's data analysis, consumers who are motivated to contribute to environmental protection have more positive attitudes towards eco-friendly products, which corroborates findings from Barge (2014) that users of eco-friendly products have shown favorable attitude towards the pricing of eco-friendly products. Second, consumers who have positive attitudes towards eco-friendly products are more likely to have a positive attitude towards eco-friendly cars, implying that consumers are likely to transfer their positive attitudes from eco-friendly products to eco-friendly cars. Therefore, consumers who would like to pay more for environmental products will also have positive attitudes toward eco-friendly cars. Moreover, consumers who favor the safety, fuel mileage, and technology features of cars are more likely to have more positive attitudes towards eco-friendly cars. This result is consistent with the Diffusion of Innovation Theory (Rogers, 2003).

MANAGERIAL IMPLICATIONS

The information gathered in this study can help marketers better reach consumers with their eco-friendly products. Based on the results, those with positive attitudes toward eco-friendly

cars were more likely to prefer technology, fuel mileage, and safety features over other car features, meaning marketers should focus on featuring these elements in advertisements for eco-friendly cars. Also, marketers of eco-friendly car companies should target consumers who have positive attitude towards eco-friendly products as a whole, since these consumers are more likely to have positive attitudes towards eco-friendly cars as well. Moreover, since consumers who have positive attitudes towards eco-friendly cars are willing to pay more for environmental protection, marketers can utilize the price skimming strategy which proposes that a newly released product be slated starting from a high price, after which point the price is gradually reduced (Besanko, D., & Winston, W.L. 1990). Tesla has already used this strategy; earlier this year, Tesla has cut base prices on all nine variants of its Model 3 and Model S four door and its Model X crossover by $2000 (Atiyeh, 2019). The findings of this study also indicate that marketers can also reach their target audience more effectively by incorporating cause marketing into their strategy. Partnering with environmental organizations, such as GreenPeace or the Sierra Club, will make companies more likely to connect with those most interested in purchasing eco-friendly cars.

In addition, the findings regarding to age and ethnicity also provides insights to marketers. Asian Americans have the highest attitude towards eco-friendly cars and have the highest collectivism belief among all ethnic groups. Therefore, company who makes eco-friendly cars can emphasize the environmental sustainability feature of their cars while marketing to Asian American and Hispanic consumers. In addition, it is also recommended to use family or a group of friends together in the advertisement consumers with high levels of collectivism tends to have higher attitude toward eco-friendly cars. On the other hand, according to the result, consumers between 30 to 38 years old have the highest attitude towards eco-friendly cars. Therefore, marketers should consider targeting specifically to this age cohort and integrate with consumer insights, such as the average family size, the place where consumers in this age group will go and seek for car information, and other car features that are appealing to consumers in this age group. Furthermore, since the younger generation tends to have higher attitude toward eco-friendly cars, car companies can build their brand image within the younger generation and let them want to have an eco-friendly car as their first car in their life.

LIMITATIONS & RECOMMENDATIONS FOR FUTURE RESEARCH

More researches have been focusing on eco-friendly cars, as this is a newly emerging and trending part of the car industry due to consumers being more environmentally conscious. One of the limitations of this study was that it did not examine if consumers who had more positive attitudes towards eco-friendly products were more inclined to purchase an eco-friendly car. A proposed next step for this research would be for it to investigate purchase intentions in addition to attitudes. One could also look to see if ethnicity or age is a signifier of inclination to purchase an eco-friendly car. Also, the reason why there is a curvilinear relationship between awareness of environmental problems and attitudes towards eco-friendly products is still unknown and may require further investigation. One possible explanation, though, may be the nature of the scale used to measure respondents' attitudes; it may be the case that interested researchers would be well-suited to explore the scales possible for measuring such attitudes to see if the curvilinear relationship between variables still crops up. Moreover, the questions that measure attitude towards eco-friendly products did not mention any specific brand or the involvement level of any given eco-friendly product, and so these factors were not considered in this study. Future studies, then, can focus on how attitudes towards low involvement eco-friendly products and attitudes towards high

involvement eco-friendly products may affect attitudes towards eco-friendly cars.

Future research should also begin to look at the amount of electricity that needs to be produced, how it gets produced, and whether or not the power plants producing the extra power needed for eco-friendly cars in fact might cause more CO_2 emission than the production of regular gas-powered cars. Research in the future could also look at the mining processes for the metals, like aluminum, that are being used to produce the eco-friendly cars. Mining processes may cause disturbances in our natural environment that contribute to pollution and damage to our global environment which may render eco-friendly cars environmentally destructive in the long run (Hudson et al, 1999). Researchers could also look at the risks involved with the disposal or recycling of car batteries in eco-friendly cars, as those batteries contain toxic substances, and unless a green solution is found and the impact it might have on the environment is justified, then it might be hard for marketers to push for eco-friendly cars and even harder for ecologically-minded consumers to justify the purchase of a supposedly 'eco-friendly' car (Ramey, 2018).

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With over 10 years of teaching experience, Chapa has taught marketing courses in the U.S., Mexico and Chile. Previously she worked as an Assistant Professor and Associate Director of the Center for the Study of Latino Media & Markets at The School of Journalism & Mass Communication at Texas State University (TSU) since 2008.

While at TSU, Chapa served as organizing committee co-chair for two Assessing The State of Spanish-Language & Latino-Oriented Media International Conferences. Global scholars from universities in Barcelona, Colombia, Mexico and Puerto Rico as well as the U.S. gather annually to present their research work, findings, and theories. The conference typically covers topics about marketing communication, telecommunication policies, media adoption and culture, among others.

At FSU, Chapa plans to continue her research, which focuses on the effect of advertising strategies on Latino consumers. She will be teaching Hispanic Marketing Communication in the fall semester.

Chapa earned a Ph.D. in International Business from University of Texas-Pan American, M.B.A. from the University of St. Thomas in Texas and a B.A. in Mass Media Communications with a minor in television and art design from Valle Del Bravo University

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