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AN EVALUATION ON THE MARKETABILITY OF TELEVISION COMMERCIALS THROUGH TECHNOLOGY-INDUCED COGNITIVE REACTIONS

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ABSTRACT
There are numerous studies on pedagogy related to the use of technology in the classroom (Tiene &Luft, 2001, 2002; Bitter & Pierson, 2005; Schifter, 2008; Boles, 2011; Hicks, 2011; Rehmat & Bailey, 2014; Ozerbas & Erdogan, 2016; Magana, 2017). In addition, the effect of technology in marketing and consumer behavior (Sweeney, 1972, Rust, 2006; Milne &Bahl, 2010; Belch & Belch, 2011; Moutinho et al., 2014; Simonson & Rosen, 2014; Spotts, 2014; Woersdorfer, 2017; Fasasi, 2019) has been studied for generations. This study will utilize technology in the classroom to determine its effects on the consumer behavior preferences of undergraduate students.

Key Words: Television commercials (TVCs), American television networks.

1. INTRODUCTION
Television commercials (TVCs) in the US first gained mainstream marketing focus in the 1950s when the percentage of Americans with a television grew from 9% in 1950 to 90% by the end of the decade (Library of Congress, 2018). The use of TVCs in the US accelerated in the 1960s, modeling an emerging consumerism that relied on buying products more often (Zapf, 2016). The impact of American TVCs was greatest during the golden era of the American television networks in the early 1980s, when most Americans had only the three major networks on their television sets. During this era, mainstream advertisements were the norm because the viewing audience was not yet fragmented into niche cable channels, and most viewers couldn't yet record their favorite shows or fast-forward through commercials like today's audience, who can choose television options like Hulu and pay more for premium packages that don't include commercials.

Organizations have used TVCs as a staple of their marketing focus since the advent of the television itself. TVCs have been attributed as having an impact on America's culture of materialism, and American usage of TVCs in the US accelerated in the 1960s and modeled a consumerism emerging that relied on buying products more often (Zapf, 2016). Over the decades, American TVCs have reflected the values, marketing trends, cultural tendencies, and even comedic tastes of Americans (Rutherford, 1994; O'Barr, 2010). For example, American TVCs generally show the brand name earlier, more often, and for a shorter duration than typical television commercials from other countries (De Mooij, 2005; Elliott, 2005; Zhou et al., 2005) because American attention spans are comparably shorter. Yunus (2016) detailed how a brand

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image can be enhanced through a TVC in a variety of reasons including viewers ability "to *see* the opportunities" on their screens that other media doesn't necessarily provide.

The popularity of TVCs has spawned numerous academic studies on their effects. These studies have focused on consumer behavior topics such as product wear out effects (Calder & Sternthal, 1980), variables prompting consumer acceptance (Belch, 1982), repetition and commercial length (Rethans et al., 1986), and consumer recall effects (Singh et al., 1988).

TVCs have been analyzed from the perspective of various consumer age cohorts to investigate their impact. Younger consumers are coveted more by multinational organizations in their advertising because younger consumers who are loyal will make more money for those organizations over's time. For instance, organizations pay more for TVC during programs with a younger demographic of viewers. Over the years, the impact of TVCs on the preferences of children (Blanc, 1953; Resik et al., 1977; Jeffrey et al., 1980; Galst, 1980; Greer et al., 1982) and teenagers (Wainwright, 1980, Lee & Browne, 1995; Ross & Stein, 2008; Shea, 2008) has been commonly studied. Of particular relevance to this study is the research on the effects of TVCson college students. In the past, consumer behavior tendencies of college students have been studied to assess the impact of TVCs on topics such as economics (Paden, 1977),tobacco advertising (Crawford, 2014), and sexism (Kassin et al., 2010).

Organizations today spend a lot of money in marketing research to build their brands, and technology has and will play an increased role (Verklin & Kanner, 2007). The marketability of a product is integral to the company's overall marketing budget strategy. Kahle& Kim(2006) described "marketability" and brand image as interchangeable in the consumer psychology of an organization's marketing communications strategy (p. 165).TVCs will continue to be part of an organization's marketing budget and will continue to evolve from just television-specific in the past to being integrated into technology-based online and social media digital marketing (Newth, 2013; Speck, 2013; Watkins, 2018).

2. METHODOLOGY

Previous research on TVCs has used predictive studies, a type of experimental design used to ascertain when and in what situations an event will occur. In this model, the goalis to discover which types of commercials or attributes within commercials prompt viewers to react cognitively, leading to a specific consumer behavior response. These past studies attempted to form relational or causal hypotheses.

This study analyzed the consumer behavior response of undergraduate college students toward "classic" American TVCs spanning multiple eras. Specifically, a list of the 50 most influential commercials was developed based on various surveys of marketing industry specialists (Elliott, 1995; EW, 1997; Advertising Age, 1999; Kanner, 1999; Vancheri, 1999; Harry & Stall, 2002; Kanner, 2003; Smith, 2003; Plunkett, 2006; Riggs, 2006).

The same commercials were shown to students in three institutions of higher education (two public, one private) from 2006-2019. The students were majoring in either a business- or technology-related field. The reactions of the students to the survey were cognitive in that they

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had to assess their immediate reactions, as opposed to a reflection in which they would have had more time to consider and/or research the commercial.

Each TVC was played in class in its entirety, along with a brief script introducing it. Students were then asked to rate each commercial on five components: 1) Marketability, 2) Memorability, 3) Likeability, 4) Chance of Success, and 5) Level of Classic-ness. Each item was ranked on a scale of 1= very low, 2= low, 3 = medium, 4= high, 5= very high. In addition, the 50 commercials were labeled as having a script intended to be humorous orcomedic.

As such, the model contained the following discrete variables, which served as predictors, in the experimental design: 1) Gender, 2) Major, and 3) If the commercial was intended to be comedic (Humor). Since the various years in which the commercials were produced(Year) had so many values, the year was treated as a continuous variable in order to provide for the best explanation within the model. To best interpret the intercept within the model, the year was centralized and thus could take on any value (calculated as year = year – mean (years)). This process scaled its value, whereas the centered year = 0, or the mean value of all years.

To allow the algorithm to develop the relationships between variables to best predict future values (i.e., fit the model), a generalized linear mixed model was determined to be the best fit. This model is a type of predictor containing random and fixed variables in order to form hypotheses. In this instance, the commercials themselves served as random factors and were interpreted as to how they affected the relationships and interactions between Gender, Major and the Commercial, whereas the interaction among Gender, Major, Humor, and Year were designated as fixed factors. By conducting this multiple hypothesis test (a style of Chi-square test or a more specific style of generalized linear model) to explain the variance (which is designed to test for homogeneity), the final model for each interaction of the five components was determined (see appendices). The final model for the "marketability" component is seen in Figure 1 below.

$$\text{Marketability}_{ijmk} = \text{Gender}_i + \text{Humor}_j + \text{Commercial}_k + (\text{Commercial} * \text{Major})_{jm} + error_{ijmk}$$

$$i = j = m = 1,2; k = 1,2,3 \ldots,50; \text{Commercial}_k \sim \text{N}(0,0.09488);$$

$$(\text{Commercial} * \text{Major})_{jm} \sim \text{N}(0, 0.0375), \text{error}_{\text{ijmk}} \sim \text{N}(0,0.83)$$

Figure 1. *Model for Marketability*

3. RESULTS & REACTIONS

Likelihood ratio tests were conducted to examine and analyze the different statistical models, using the variables in the above model to interpret how they interact with each other. Alpha = .05 was utilized; those variables testing at a *p*-value > .05 were not significant, and those at *p*-value < .05 were significant.

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From the above model and likelihood ratio tests, it can be confirmed that the "Major" of the student and the "Year" in which the commercial was produced do not have significant effects/interaction son Marketability, with *p*-values > .05. However, the same tests show that"Gender" and "Humor", with *p*-values < .05, are deemed significant and thus do play an important role in Marketability (see the model summary's code output report of the commercial dataset below).

```
Linear mixed model fit by maximum likelihood  ['lmerMod']
Formula: Marketability ~ gender + humor + (1 | commercial_index) + (1 |      commercial_index:BT)
   Data: data

     AIC      BIC   logLik deviance df.resid
 21829.1  21871.2 -10908.6  21817.1     8136

Scaled residuals:
    Min      1Q  Median      3Q     Max
-3.3793 -0.6262  0.0316  0.6878  3.1839

Random effects:
 Groups               Name        Variance Std.Dev.
 commercial_index:BT (Intercept) 0.03774  0.1943
 commercial_index    (Intercept) 0.09488  0.3080
 Residual                        0.83038  0.9113
Number of obs: 8142, groups:  commercial_index:BT, 100; commercial_index, 50

Fixed effects:
            Estimate Std. Error t value
(Intercept)  3.54842    0.04972  71.362
gender1     -0.02759    0.01116  -2.472
humor1      -0.11407    0.04965  -2.297
```

Figure 2. *Marketability Model's Code Output Report*

Figure 3 is a visual depiction of the relatively higher ratingsfor marketability attributed by males. Since the average male scores on marketability is statistically significant, it may be inferred that males tend to feel that commercials make the products and the organizations more marketable. Since it is not due to chance that the males found the commercials more marketable, future studies may analyze what factors within the commercials prompt males to feel the brand and/or products in the commercial are more marketable.

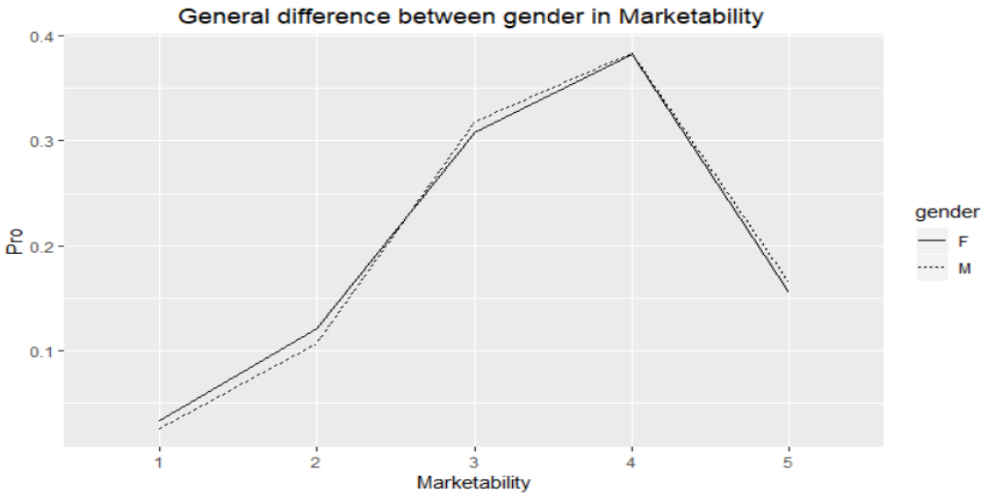

Figure 3.*Marketability Scores: Difference in Gender*

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Figure 4 below shows the difference in marketability scores by major, whereas students in technology-related fields generally rate marketability at higher rates, though at rates that are not statistically significant.

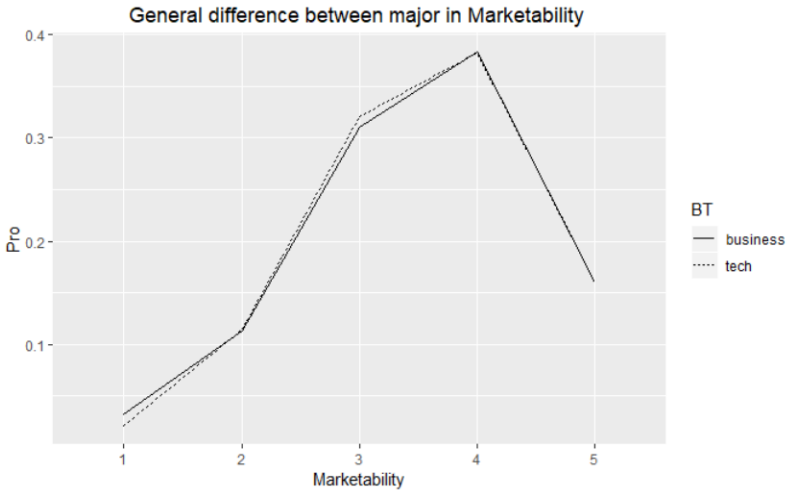

Figure 4. *Marketability Scores: Difference in Major*

Furthermore, more humorous commercials generally rate higher in marketability, with a *p*-value < .05, which means that it is not likely to be due to chance that commercials intended to be funny rate higher in marketability. Organizations often use humor in their brand campaigns, and after reflection of this statistical output, they should continue to integrate humor into their advertisements. However, it should be noted that several commercials that were unintentionally funny ("campy") were not considered in the sample set of commercials labeled "Humor".Future studies may assess whether humor is an inherent factor in making a product more marketable, particularly to males, and whether humor in print advertisements or other media has the same effect as humor in videos.

Also, it should also be noted that just because a TVC is older or less modern does not indicate that younger viewers are not receptive and/or are likely to reject it just based on age. This may provide those in marketing more incentives to re-release older versions of their organizations' TVCs for younger groups of consumers who may not be aware of the classic versions of the organization's past seminal advertisements.

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Appendix A.

Top 50 List of Classic American Television Commercials and Survey Data

Commercial Name	*Year*	*Humor (Y/N)*	*Bus*	*Tech*	*M*	*F*	*N*
Pepsi Michael Jackson	1983	N	162	46	104	105	209
Bartles & Jaymes "Thank You for Your Support"	1985	Y	150	59	104	105	209
Mr. Clean original	1958	N	148	47	101	94	195
Head On	2006	N	150	48	100	98	198
Grey Poupon	1987	Y	153	45	100	98	198
Gap Khaki's Swing	1998	N	149	55	97	97	194
Wendy's "Where's the Beef"	1984	Y	135	46	90	91	181
More Doctor's Smoke Camels	1949	N	167	49	105	111	216
Mars Blackmon Air-Jordan	1988	Y	132	53	93	92	185
1974 Ford Mustang	1974	N	133	53	96	90	186
Miller Lite (Taste Great Less Filling) Promotion	1978	Y	120	52	84	88	172
Lucky Strike Cigarette	1948	N	137	51	95	93	188
Like A Rock	1993-2004	N	132	50	97	85	182
1950 Gillette Razor	1950	N	139	47	99	87	186
Commodore Vic20	1982	N	139	48	97	90	187
California Raisins	1986	Y	114	48	88	74	162
Mama-Mia That's A Spicy Meatball	1969	Y	139	49	98	90	188
New Coke	1985	N	115	45	83	77	160
Talking Bud-Weis-Er Frogs	1995	Y	125	49	90	84	174

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Bird vs. Jordan	1993	Y	155	48	104	99	203
I've Fallen and I Can't Get Up	1987	N	134	50	99	85	184
Energizer Bunny	1989	Y	72	52	67	57	124
Brain on Drugs	1987	N	139	48	98	89	187
Morning Again in America	1984	N	148	47	105	90	195
Bo Knows…	1989	N	146	47	104	89	193
Nike: Revolution	1987	N	146	33	90	89	179
Apple McIntosh 1984	1984	N	145	41	102	84	186
Crash Dummies	1980's (series)	Y	137	46	99	82	181
Chevy in Technicolor	1940	N	137	46	96	85	181
Keep America Beautiful	1970	N	140	46	97	87	184
Dan vs. Dave	1992	Y	115	42	84	73	157
1958 Edsel	1958	N	136	44	97	83	180
Budweiser "wassuuup"	1999	Y	118	41	87	72	159
Manning Mastercard	2006	Y	127	45	95	77	172
Oscar Mayer	1973	N	131	48	99	80	179
Ray Charles/ Pepsi "You got the Right one Baby	1991	N	136	50	99	87	186
Volkswagen "Funeral"	1969	Y	137	49	100	86	186
Got Milk?	1993	Y	131	46	96	81	177
Little Penny Nike	1996	Y	130	44	93	81	174
Life Cereal	1972	Y	129	44	93	80	173
Kennedy Presidential Campaign	1960	N	126	45	92	79	171
Daisy Girl	1964	N	119	32	81	70	151

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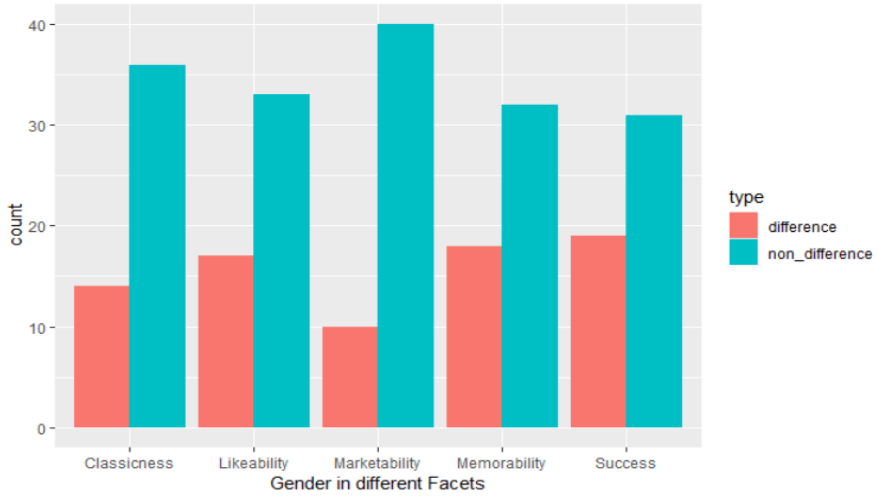
Magic Vs Bird	1986	N	87	52	75	64	139
GoDaddy.com	2005	N	34	11	22	23	45
Monster "When I Grow Up"	1999	Y	91	35	71	55	126
"I'd Like to Teach the World to Sing" Coke	1971	N	116	35	82	69	151
Max Headroom Coke	1986	N	101	35	72	64	136
Don't Squeeze the Charmin	50's-'70s (series)	Y	125	35	82	78	160
Federal Express "Fast Paced World"	1981	Y	101	34	70	65	135
Mean Joe Greene/ Coke	1979	N	125	36	84	77	161

Appendix B.

Commercials Counts Plot: Difference and non-difference based on Gender



Appendix C.

Commercials Counts Plot: Difference and non-difference based on Major

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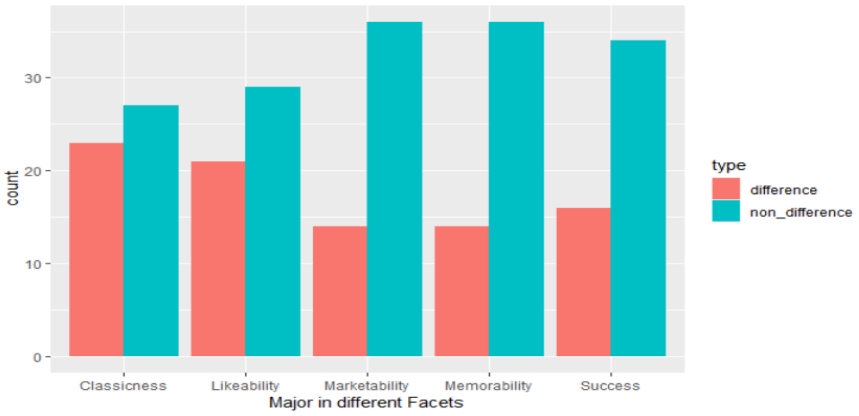

Appendix D.
Model for Memorability

$$Memorability_{ijmk} = \text{Gender}_i + \text{Humor}_j + \beta\left(\text{Year}_{ijmk} - \overline{year}\right) + \text{Commercial}_k + (\text{Commercial} * \text{Gender})_{ik} + (\text{Commercial} * \text{Major})_{mk} + error_{ijmk}$$

$i = j = m = 1,2; k = 1,2,3 \ldots,50;$

$\text{Commercial}_k \sim \text{N}(0,0.12269); (\text{Commercial} * \text{Major})_{mk} \sim \text{N}(0, 0.058);$

$$(\text{Commercial} * \text{Gender})_{ik} \sim \text{N}(0, 0.0175); error_{ijmk} \sim \text{N}(0, 0.992)$$

Appendix E.
Model for Likeability

$$Likeability_{ijmk} = \text{Humor}_j + (\text{Gender} * \text{Major})_{im} + \text{Commercial}_k + (\text{Commercial} * \text{Gender})_{ik} + (\text{Commercial} * \text{Major})_{mk} + error_{ijmk}$$

$i = j = m = 1,2; k = 1,2,3 \ldots,50; \text{Commercial}_k \sim \text{N}(0, 0.193); error_{ijmk} \sim \text{N}(0, 0.982)$

$(\text{Commercial} * \text{Major})_{mk} \sim \text{N}(0, 0.059);\ (\text{Commercial} * \text{Gender})_{ik} \sim \text{N}(0, 0.026);$

Appendix F.
Model for Chance of Success

$$Success_{imk} = \text{Gender}_i + \text{Commercial}_k + (\text{Commercial} * \text{Gender})_{ik} + (\text{Commercial} * \text{Major})_{mk} + error_{imk}$$

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$i = m = 1,2; k = 1,2,3 \dots ,50; \text{Commercial}_k \sim \text{N}(0,0.149);\ (\text{Commercial} * \text{Major})_{mk} \sim \text{N}(0, 0.045);\ (\text{Commercial} * \text{Gender})_{ik} \sim \text{N}(0, 0.0169); error_{imk} \sim \text{N}(0, 0.905)$

Appendix G.

Model for Classsicness

$$Classicness_{ijmk} = \text{Gender}_i + (\text{Gender} * \text{Humor})_{ij} + (\text{Humor} * \text{Major})_{jm} + (\text{Gender} * \text{Major})_{im} + \beta(\text{Year}_{ijmk} - \overline{year}) + \text{Commercial}_k + (\text{Commercial} * \text{Major})_{mk} + (\text{Commercial} * \text{Gender} * \text{Major})_{imk} + error_{ijmk}$$

$i = j = m = 1,2; k = 1,2,3 \dots ,50; \text{Commercial}_k \sim \text{N}(0,0.124); error_{ijmk} \sim \text{N}(0, 1.075)$

$(\text{Commercial} * \text{Major})_{mk} \sim \text{N}(0, 0.07557);\ (\text{Commercial} * \text{Gender} * \text{Major})_{imk} \sim \text{N}(0, 0.01547);$

Appendix H.

P-value Data from Chi-square Test forAll Commercials to Detect the Reaction in Terms of Gender and Major

	Marketability
Gender	0.07614
Major	0.1927