

PERFORMING ON THE SCREEN: AN EXPLORATION OF GENDER REPRESENTATION  
IN TECHNOLOGY VIDEO ADVERTISEMENTS

by

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## ABSTRACT

This study investigates the representation of gender in technology-related video advertisements. This thesis quantitatively and qualitatively examined 54 of the most recent commercials by the top nine Fortune 500 technology companies. A total of 407 characters were coded and quantitatively analyzed while the videos themselves were qualitatively assessed with particular attention given to the videos' themes and the interactions between the characters and the technology products and services. Results of the analyses showed that there were more male, Caucasian characters than any other character type based on gender and race/ethnicity. Females were mainly characterized according to traditional stereotypes, such as being linked to the home and expressing emotions. On the other hand, males were most often presented outdoors and conveyed confidence. Overall, the advertisements targeted upper class, Caucasian males while technology itself was associated with power, speed, and progress. These findings have important implications for understanding the persistence of gender inequality in the field of technology and in existing cultural beliefs surrounding gender and technology.

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## INTRODUCTION

Throughout history, the purported advancement of civilizations has been largely determined by the use of technology. Major transitions are demarcated as eras often designated in terms of technology. Whether it was iron smelting in the Iron Age or the rise of manufacturing during the Industrial Revolution, technology has played a vital role in shaping the future. A recurring pattern that this history of economic progress in Western societies reveals is the enduring unequal distribution of power in the social structure of gender. Although it can be argued that there is an ongoing upward economic and occupational mobility for women, particularly in the service sector, it is generally understood that males occupy more prominent and influential positions (Kwolek-Folland 2007). Males are widely credited with the development of modern industrial societies.

The current era is recognized as the “new technology era” or the “information age.” It is characterized by the emergence of digital technologies, especially computers and the Internet, which are vastly affecting the lives of individuals and the makeup of societies. Today it is argued more resolutely than ever that technology is an essential component of advancement for both individuals and society. With the profusion of these technologies applicable in our everyday lives and beyond, technology is increasingly becoming a deterministic factor in the success of businesses and economies, academic achievement, and social mobility (Dempsey 2009; Etzkowitz, Gupta, and Kemelgor 2010).

Technology is especially advantageous for those considered oppressed— women and also non-white minorities in the United States and lower-income individuals— as it provides a

gateway to new opportunities. For instance, for women in developing countries technology serves as a way to circumvent poor infrastructure, learn skills, and connect with the rest of the world. Those who use technology are able to earn more income, gaining access to company events, programs, and meetings through telecommuting. Women are reportedly more easily able to start up businesses that will contribute to their countries' economies (Etzkowitz et al. 2010). The importance of technology renders it necessary to understand the relationship between gender and technology.

The year 2000, the estimated start of the "new technology era," can be remembered for its superfluous optimism, dot-com phase, as well as its hopeful outlook on the new technology's ability to mitigate social inequalities in gender (Dempsey 2009). Unfortunately, despite the promises of 2000 for technology's creation of equality for women, there is evidence that technology is yet another arena generating gender inequalities. Extant studies on gender and technology all uphold the existence of the cultural belief that technology is a male domain. Studies indicate a gender gap in technology occupations as well as in interest, usage, and self-assessment of technology competency (Bolliger 2008; Fedorowicz; Vilvovsky, and Golibersuch 2010).

In today's modern, consumerist society, marketing in the media has a massive influence over individuals and culture and as such, it is an ideal site in which to investigate the link between gender and technology (Knupfer 1998; Jamhourri and Winiarz 2009). Past literature on gender in technology and the media have mainly analyzed print advertisements, commonly using magazines, newspapers, and journals as sources but print advertisements are rapidly dropping in number (e.g., Dilevko and Harris 1998; Jauhiainen 2007; Dempsey 2009). Studies on gender in



video advertisements, a primary marketing tool, have largely neglected commercials of technology products (e.g., Paek, Nelson, and Vilela 2010; Espinar-Ruiz and González-Díaz 2012). In order to fill these gaps, this study will explore the representations of gender in video advertisements of technology products and services from the years 2012 and 2013 using a qualitative and quantitative content analysis.

## LITERATURE REVIEW

### Theoretical Framework

The foundation of my study is based on Goffman's (1987) theory on gender display and the notion of "doing gender," a concept established by West and Zimmerman (1987). This research is guided by the perspective that gender is in fact a social construct, rather than "essential" natures of individuals dichotomized into male and female categories based on biology (Goffman 1977:303). Moreover, utilizing West and Zimmerman's (1987) perspective, gender is framed in this study as an adopted social feature enacted in order to maintain the perception of being female or male. "Doing" gender is something that is learned. Individuals look towards examples of how to be seen as being either female or male (West and Zimmerman 1987). Applying this standpoint, it is possible to understand how gender is being taught and displayed through advertisements of technology products and services by studying such advertisements.

The categorization of gender is commonly considered as naturally occurring. Goffman (1987:7) maintains that society generally believes in an "essential nature," or natural tendency, in individuals to express gender aligned with biology. Biological determinism defends the notion that men and women are genetically different and act according to their "nature" (Goffman 1977; West and Zimmerman 1987). This gives rise to the familiar expressions and stereotypes dichotomized into what is traditionally understood as femininity and masculinity.

Goffman (1977), West and Zimmerman (1987), and other scholars of postmodern and post-traditional theories take a different approach in interpreting gender in society (Gauntlett 2002). They believe gender is a purposeful display ascribed socially and not biologically. It is through the repetition of actions and behaviors that the attributes of femininity and masculinity are instilled and reinforced in both society and in individuals. Society itself plays a role in regulating gender portrayal by having gender specific expectations and approving or admonishing certain behaviors (West and Zimmerman 1987).

Goffman (1977) contends that the characterization of individuals by gender serves a purpose in the structuring of society. According to Goffman (1977), individuals possess a social identity which is largely characterized by gender. Identity by gender not only provides individuals with a sense of possessing a role in the social hierarchy, but also helps in dictating social situations. Gender governs character, behavior, and the expected arrangement of actions in social scenarios. The focus here is at the micro-level where gestures, etiquette, communication, and disposition micro-ecologically manages social interaction and contributes in building the framework of the larger social structure (Goffman 1977; West and Zimmerman 1987). Social identity or role is signaled through these micro-level interactions and displays (Goffman 1987).

West and Zimmerman (1987) do not believe gender is a role. Rather, they view gender as an achievement accomplished through the constant interaction and performance of gender. Differences in gender portrayals assist in the production of cultural differences and gender inequalities. Therefore, gender may be considered a performance where individuals model appropriate behavior and reproduce gender stereotypes or attributes (Goffman 1987; West and Zimmerman 1987). This social constructionist perspective gives way to the concept of gender

fluidity and the flexibility of identity. What is considered to be natural or real is solely founded on societal beliefs. Attitudes and self-conceptions are unstable as they are greatly influenced by society and shifting social identities (Biddle 1986). Goffman (1987:8) goes as far as to say that there may be no gender identity, only the representation and performance of one.

Due to changing social beliefs and issues, how gender is presented in the context of technology today may or may not be the same as previous portrayals of gender in marketing. In his research conducted in the 1970s, some of the characteristics Goffman (1977:306) linked to femininity are frailty, sexual attractiveness, and a life “centered around household duties.” Goffman (1977) also claimed women were positioned at a lower social status in comparison to men who possess traits of authority and power. These characteristics Goffman (1977) outlines are reflected in other research conducted on past marketing patterns (e.g. Dilevko and Harris 1998; Knupfer 1998; Stoica, Miller, and Ardelea 2011).

Literature also exists that contends that non-whites and low-income individuals are commonly associated with negative traits, behaviors, or habits. Some traits associated with Blacks and low-income individuals, for instance, are laziness, low intelligence, unruliness, dependency on others, and lasciviousness. Women also share some of these characteristics in marketing, such as dependency, submissiveness, and low intelligence (Goffman 1977; Roberts 1997; Park 2011). Race/ethnicity, class, and gender cannot be viewed as separate social categories but exist and are experienced simultaneously. Therefore, the intersectionality of race, class, and gender will be taken into account in this study (West and Fenstermaker 1995).

Meanwhile, technology is more recently aligned with the values of progress, competency, business, and money. The traits assigned by society to women, non-whites, and low-income

individuals are the exact opposite of the values linked to technology. In this respect, women, non-whites, and low-income individuals do not fit the criteria required to be portrayed as efficient and typical technology users. On the other hand, society esteems white, upper class males as inherently possessing the characteristics necessary to be considered technology's target market. Therefore, I expect that video advertisements will identify the competent technology user and ideal consumer as a young, white male.

According to Goffman (1977) and West and Zimmerman (1987) performance of gender and gender display are largely regarded by society as unmistakable revelation of the fundamental nature of men and women. In a new social encounter, such as interaction with contemporary technology, there is a presumption that it is open to being gendered. The display of gender with technology in advertisements is a form of confirmation for society of the inherent natures of men and women toward technology. Individuals may model their social interaction in regards to technology after advertisements in order to align with the expected behavior and attitudes of their displayed gender. Thus, examining video advertisements can reveal what society will come to consider normative gender behavior towards technology in the future.

## Technology Marketing

Marketing serves the purpose of generating revenue by creating product, service, or brand awareness and motivating buyers. The ability of mass marketing not only to capture attention but also to influence individuals and society is reflected in the generated sales and large marketing budgets companies set aside. However, marketing does more than just promote sales. Particularly in the United States' modern consumerist environment, the oftentimes intrusive ubiquitous marketing messages penetrate society, possibly shaping cultural beliefs. Marketing may influence viewers, even at a subconscious level. This is especially true for visual advertisements, which often produce emotions and enhance the connection the viewer makes between the advertisement and him/herself (Knupfer 1998). Within the messages of advertisements, the consumer's identity, role, attitudes, values, and behaviors are presented within the context of a certain social situation. Thus, the manner in which gender is displayed in relation to technology may serve as a guide that individuals may follow to do gender (Goffman 1987; West and Zimmerman 1987).

## Gender in Technology Marketing

Goffman's (1987) theory points to the importance of being critical of portrayals and messages in video advertisements of technology. Although there is a belief among some contemporary researchers that men and women are for the most part equal in advertisements

(Gauntlett 2002), content analyses on television advertisements find men and women are not portrayed in an equal manner (e.g., Coltrane and Messineo 2000; Prieler and Centeno 2013).

There are distinctive masculine and feminine characteristics and overall unequal representations of ability and power in advertising (Gauntlett 2002). Traditional gender approaches toward marketing technology are being used for the technologies of today. The long-established gender beliefs pertaining to technology in other and “old” technology, such as cars and televisions, are similarly applied to “new technology,” such as smartphones, computers, tablets, and the numerous digital devices (Knupfer 1998). Throughout history, technology has been associated with men. For instance, for much of the last century, women’s primary relation with cars in advertisements was the “mechanical bride,” a sexualized icon (Dempsey 2009). Studies confirm that the belief associating males with technology is still in existence in the marketing of technology (e.g. Jauhiainen’s 2007; Bolliger 2008).

The common traits associated with men in technology advertisements are “strength, power, aggressiveness, competence, and success” (Bolliger 2008:46). According to Jauhiainen’s (2007) analysis, the major themes in newspaper advertisements of technology and men were business, work, and money. In an analysis of advertisements in the mainstream technology magazine, *Wired*, men were associated with corporate business, rebellion, and empowerment (Dempsey 2009). In Dilevko and Harris’s (1998) study of 3,001 computer technology advertisements in magazines and journals, it was concluded that men were present more often than women in the advertisements.

Bolliger (2008:46) reports characteristics of femininity as being linked with “supportiveness, submissiveness, warmth, and nurturance.” Many studies reveal women

presented in traditional roles, often involved with the home, family, and children (Jauhiainen 2007). Bolliger (2008) also discovered that women were commonly featured as decorations and sexualized symbols. Additionally, the common theme associated with women is feelings. For example, in Knupfer's (1998:59) analysis of advertisements, a young woman states, "My provider left town on me." The reply that is returned is, "I know how you feel."

Other descriptions of femininity in marketing are women as submissive and in dire need of help. Usually this help comes from a man, from whom women attain security and on whom they are dependent. Other regular feminine characteristics revealed in past technology marketing trends include modesty, frailty, and a connection with the color pink (Kearney 2010; Stoica et al. 2011). The implicit frailty of women illustrated in advertisements, is a stark comparison to the portrayal of the confident man who encompasses the concept of technology as a white, elite male domain (Bolliger 2008; Dempsey 2009).

In ads, a woman is frequently placed in scenarios where she is confused or the circumstances, her actions, and her thinking are ambiguous (Dempsey 2009). It is no wonder then that gender stereotypes render women as predominantly caring about a technology's user-friendliness and simplicity. Of course, this is in addition to her final other concern over the product's physical appearance and design. Contrarily, men are regarded in technology advertisements as independent, in control, and deep thinkers (Dilevko and Harris 1998).

Women and the products, and even occupations with which they are identified, are marginalized. In technology advertisements, the actions of women and the decisions they make are generally relatively unimportant (Etzkowitz et al. 2010). Studies repeatedly show men depicted in high-status occupations, while women were either seemingly without a career or not



possessing a career interest; though some were shown holding lower-level jobs, such as clerical work which often supported the higher-level job of a male (e.g., Knupfer 1998; Kawabe 2007).

There is a general perspective that technology is the realm of the white, upper-middle and upper class male and many studies highlight a gender gap in technology adoption, self-assessment, education, and occupation (e.g., Etzkowitz et al. 2010; Fedorowicz et al. 2010). When it comes to purchasing technology products, men are more often early adopters, while women are commonly laggards (Bolliger 2008). Overall, studies indicate males as primary technology users and having more confidence in their technology or mathematics competency level than females (Seegers and Boekaerts 1996; Fedorowicz et al. 2010). Furthermore, the number of women enrolling in computer science majors is declining. Only 25 percent of mathematics and computer sciences bachelor degrees were awarded to women in 2010 (NSF 2013). In addition, of the women who did earn STEM (Science, Technology, Engineering, and Mathematics) degrees, 26 percent worked in STEM occupations, while 40 percent of men with STEM degrees had STEM jobs (Beede et al. 2011). The percentage of women in mathematics and computer sciences occupations have decreased from 30 percent to 27 percent from the years 2000 to 2009 (Beede et al. 2011).

Still, marketing does not necessarily present accurate depictions of reality. While there is a cultural belief that technology is for white males that is reflected in the gender gap in self-assessment, education, and occupation, there are recent demographic changes that are dissolving many of the differences between gender in actual technology usage. Studies have reported that the number of women using the Internet is increasing and that women are equal users with equal access to various technologies, such as cell phones (Dempsey 2009; Mortberg 2003). Internet

usage in the U.S. by women and men are now reportedly similar. According to Pew Research (2013), 84 percent of women use the Internet and 85 percent of men use of the Internet. Women also use social media sites significantly more than men do (Duggan 2013). In the U.S., the percentage of African-American and Caucasian Internet users is also approximately the same (Pew Research 2013).

Results from studies on marketing trends in technology indicate that marketers so far have not adapted to these on-going changes (Dilevko and Harris 1998; Dempsey 2009). As transitions in usage are occurring, marketers' depictions in advertisements may be increasingly distorting society's perception of reality. In view of the capitalistic consensus that businesses advertise in order to drive sales up, it may seem counter-intuitive that companies elect to pursue one specific market. In Dempsey's (2009) interpretation of technology marketing trends, she considers the current economy, which was in an economic downturn. It can be assumed that marketers often opt for the less risky route of depicting the typical technology consumer as a white male. Moreover, advertisements with women as primary products users and products that are linked with femininity deter male consumers. On the other hand, the products in advertisements displaying men as primary users may be more equally purchased by both men and women. The results from earlier studies convey that marketers apparently see no need to diverge from the conventional presentation of gender in technology (Dilevko and Harris 1998). This study will help reveal whether or not gender depictions in advertisements are moving away from the conventional roles and becoming more representative of actual user populations.

The bulk of studies critiquing technology advertisements have focused on gender representation but it is also important to consider race/ethnicity and class representation in

marketing trends. Researchers have largely neglected including observations of race and class portrayals in technology advertisements. In studies where issues of race/ethnicity are briefly discussed, it is apparent that non-whites seldom appear in advertisements (e.g., Demetrulias and Rosenthal 1983; Dempsey 2009). It is also indicated that individuals depicting lower classes are no longer appearing in advertisements and the character of the “Average Joe” user of technology has all but disappeared (Dempsey 2009). Although it may be difficult to accurately identify race/ethnicity, White or Caucasian, Black or African-American, Hispanic, and Asian races/ethnicities are coded in the current study. There will be a category for “Other/Unknown” for other races/ethnicities and for characters whose races/ethnicities cannot be easily determined (see codesheet in Appendix A).

The current research serves the purpose of providing a recent quantitative and qualitative analysis of the representation of gender in technology advertisements. In the past, technology was exclusively associated with males. However, the increase in women’s usage of the “new technologies” confirms verifiable changes. Still, it seems the belief that technology is a white, male domain persists and a technology gap in other aspects remains. This study maintains that marketing is a primary demonstrator of the performance of gender. Therefore, the findings will provide insight into the currently displayed relationship between gender and technology.

## METHOD

The purpose of this study is to explore the representation of gender in consumer technology video advertisements using a quantitative and qualitative content analysis. I have collected, assessed, and categorized raw data from videos, from which I then interpreted and examined emergent patterns. The unit of analysis is the human character in the video advertisement. Each character was coded to be quantitatively analyzed. As video advertisements tell a narrative and should be also considered as a whole, this study included a qualitative component. For the qualitative data collection and analysis, the entire video served as the unit of analysis, with particular focus on the characters and their relationships with both technology and other characters in the video. A qualitative interpretation helps to identify the manifestation of cultural beliefs or stereotypes. Qualitatively assessing the data from video advertisements allowed for a deeper analysis of the messages, themes, and physical human presence, or lack thereof, as they relate to the portrayal of gender. As Schilling (2006:29) put it, the sociological tradition in qualitative content analysis concerns "...the human experiences that become manifest in the texts." While coding provided a useful structure in content analysis particularly in quantifying data, I additionally placed an emphasis on comprehending and interpreting gender representation within the context of each video advertisement. In doing so, I have been able to make the connections between the results of this study and gender theories.

## Sample

In order to better generalize to all consumer technology advertisements, I first chose advertisements from companies whose products and services are widely popular and purchased. I used the 2013 Fortune 500 list to select such companies. Companies within the Fortune 500 list are considered as “America’s largest companies” on the premises that they are ranked as having the highest total revenues for the fiscal year. This list consists of companies from a variety of industries and so I chose consumer technology companies positioned at the top of the list. The nine companies in my selection are: Apple, AT&T, Hewlett-Packard, Verizon, Microsoft, Comcast, Dell, Intel, and Google.

There are a plethora of videos created by companies to promote their products and services. Videos come in a variety of styles as well, and serve purposes beyond motivating sales. Many of these videos are longer than three minutes and are how-to videos, function to build brand awareness, communicate social responsibility, or cultivate the company culture through humor or inspirational entrepreneurs’ success stories. These videos are not included in this study. Some videos seem to perform the sole function of advertising their products or services. These are often explicitly labeled as “commercials” or “TV ads.” They are considered more main-stream, meaning they are shown to the mass public and usually on more than one type of media, such as on the Internet and broadcasted on television. These ads range from approximately thirty seconds to one and a half minutes in length. My sample is comprised of this type commercial video advertisement. These main-stream or commercial advertisements were available directly on the company websites or uploaded onto video platforms by the companies.

Sixteen advertisements fit the criteria from Apple which mainly promote their iPads and iPhones. There are also sixteen ads from AT&T advertising their 4G LTE Network. Fifteen advertisements promote notebooks, tablets, and laptop-tablet hybrids from Hewlett-Packard. Verizon has a total of 67 commercials related to their wireless network, phones, and plans. There are 24 recent advertisements from Microsoft showcasing phones, Bing, the cloud, and Kinect. Comcast has 18 TV commercials of their cable television, Internet, and Voice services. There are ten commercials for laptops from Dell and thirteen from Intel of their Ultrabook. Last of all, Google has 11 television ads of Google+, Chrome, their search app, and Google Drive.

I have sorted through these advertisements and selected my sample based on certain criteria. The advertisements must be marketing consumer products or services. They must also be television commercials devised for the mass public. The advertisements I chose are the most recent and readily available advertisements—they have all been uploaded on the Internet in 2012 and 2013. I selected the six most recent advertisements from each company. There are nine companies with a total of 143 ads but by using only six of the most recent ads, I reduced my sample size to fifty-four.

## Coding

### *Quantitative*

Characters are analyzed from each video. I identified a character as the physical appearance of the human-like body or figure, body parts, or voice in the advertisement. Coding served as a consistent and objective way to gather raw data from the videos. The purpose of using coding, rather than a purely qualitative approach, is to ensure that all relevant data were collected in a systematic, quantitative manner into categories that are both exhaustive and mutually exclusive. I coded for gender, age, race/ethnicity, setting, competency, product usage, reasons for usage, character interaction, character role, marital status, camera focal length, camera angle, and the sex of the voiceover (see Appendices A and B). Some of these categories are derived from Goffman's (1977) theories on the display of gender, such as the association with the family, home, or other traditional context, and whether they are shown as being submissive or dominant. The variables selected have proven to be valuable to study in the past by Craig (1992), Smith (1994); Furnham, Abramsky, and Gunter (1997), and Stoica et al. (2011). In order to reduce bias in coding, a second coder coded 25 percent of the data, which consisted of 14 advertisements. The data were then analyzed to check for reliability using Holsti's method (1969) to calculate proportion agreement, observed. The mean of the variables for proportion agreement was approximately 80 percent. The more rigorous and conservative reliability coefficient, Cohen's *kappa*, was used as well, resulting in a mean of  $\kappa = .67$ . The variables, character interaction and character role, were omitted from the tests as they were found by both coders to be highly subjective and therefore not as significant in the quantitative analyses. I

completed the coding first before analyzing the material qualitatively in order to limit the influence, distortion, and sway of personal bias from the researcher which may stem from a responsive and interpretive analysis of the advertisements.

### *Qualitative*

I qualitatively coded categories that cannot be analyzed through quantitative coding alone. Coding was done mainly using an open coding technique, although based on previous research and theories concerning gender representation, I did bear in mind possible categories relating to objectification, theme or form variables, and stereotypes. Objectification, as well as body type, weight, and overall physical appearance could reveal insightful information about the social beliefs being presented. The theme, tone, and mood of the ad may be revealed by looking at the technical elements of the ad; voices and key words can divulge emotion, attitude, and gender-specific communication styles. Additionally, music can work to set the mood for the advertisement. Other technical aspects that can be assessed are the movement of the camera, the brightness and color scheme, screen time, and pacing. The final category is common stereotypes or media tropes, such as the nagging wife, lazy husband, or manic pixie girl.

These categories and technical aspects contributed to informing the narrative of each advertisement. For instance, I examined the manner in which the body is shown and the implied purposes it served. Character development and the narrative are essential as well. Characters' implied back story, including any indication of having hopes and desires; as well as characters' attire, attitude, and general characteristics were all significant in understanding who are portrayed as using technology products and services and whom the advertisements are targeting.



The qualitative section allowed for richer interpretations of the values and stereotypes conveyed in each advertisement. Additionally, I considered other categories as they arose, as well as concepts based on studies by Jauhiainen (2007), Dempsey (2009), and Stoica et al. (2011), such as the indication of an occupation, role, or marital status, and association with money. Implied messages and the marketers' intentions may also be recorded for a more in-depth and complete analysis (Elo, Satu, and Kyngas 2008). Open coding allowed for the characteristics attributable to technology as a whole and the characters that use it to be revealed. It also brought to light the overall representations of female and male characters in relation to technology.

### Analytic Strategy

The data were first quantitatively analyzed using frequencies, cross-tabulations, and chi-square tests. A report of frequencies conveyed the number of advertisements with males and the number of advertisements with females. The frequency distributions also revealed the number of observations for age, race/ethnicity, and other variables. Cross-tabulations were employed to analyze the relationships between gender and other key variables including age, race/ethnicity, setting, competency, product usage, reason for usage, character interaction, and character role. Cross-tabulations helped to illustrate any associations between gender and any of these variables. Finally, chi-square tests were utilized to test for statistically significant relationships between the independent variables, which are gender and race/ethnicities, and the dependent variables. For

the qualitative analysis, open-ended written responses were analyzed, using open coding to look for patterns across advertisements that generalize characteristics of technology and characters, as well as nuanced understandings or representations of gender.

# FINDINGS

## Quantitative

Statistical analyses revealed the number of characters to which the variables could be applied and whether or not there were relationships between the variables. In total, there were 407 characters that were coded. Analyses of frequencies show that there were more male characters than female characters overall and there were more White, Caucasian characters than any other race/ethnicity. Specifically, there were 233 male characters and 168 female characters. The number of male voice-overs in comparison to female voice-overs was substantially greater: approximately 87 percent of the voice-overs were seemingly performed by males. Figure 1 illustrates this difference.

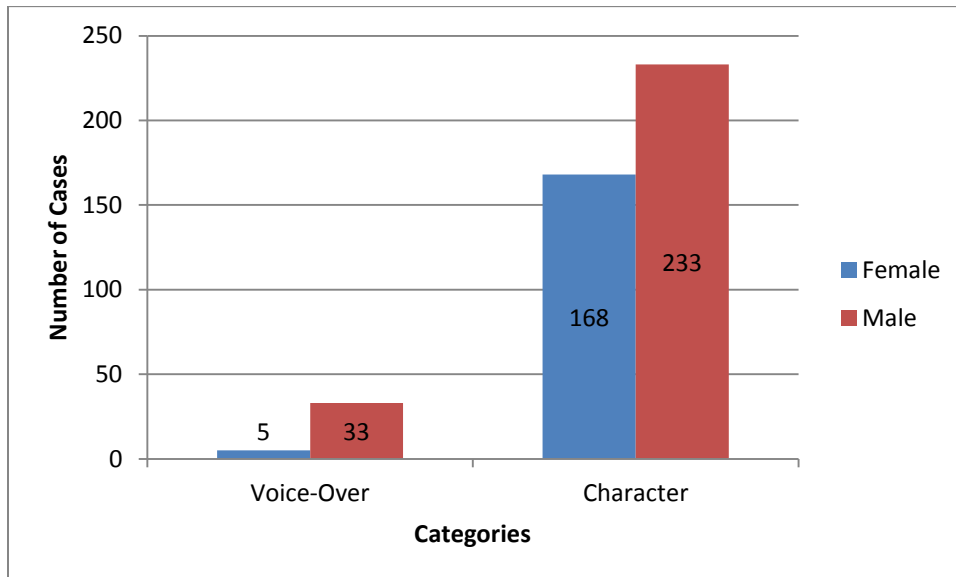


Figure 1: Number of Characters and Voice-Over by Gender

Fifty-four percent of the characters were Caucasian. Twenty-two percent of the characters' racial classification could not be categorized with certainty for various reasons, but mainly because they were not visible enough on the screen to be identified. African-American made up the next largest category at 13.5 percent, followed by the Asian category with 9.1 percent. Hispanics made the fewest appearances in the ads, making up only 2 percent (Figure 2). For age groups, elderly individuals, those appearing to be over 60, were 3 percent while adults, 19 percent were children, and young adults comprised 79 percent of the total characters coded (Figure 3).

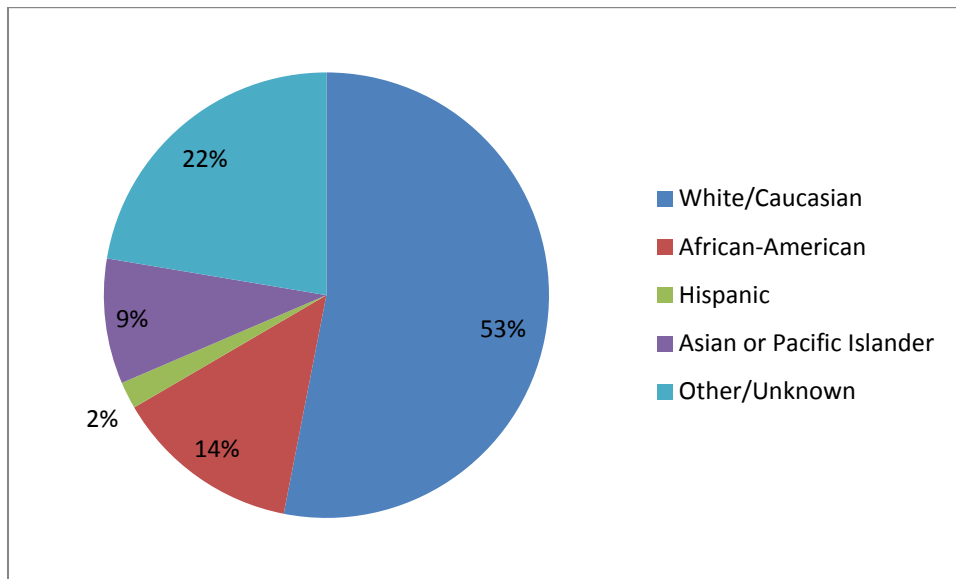


Figure 2: Representation of Race/Ethnicity

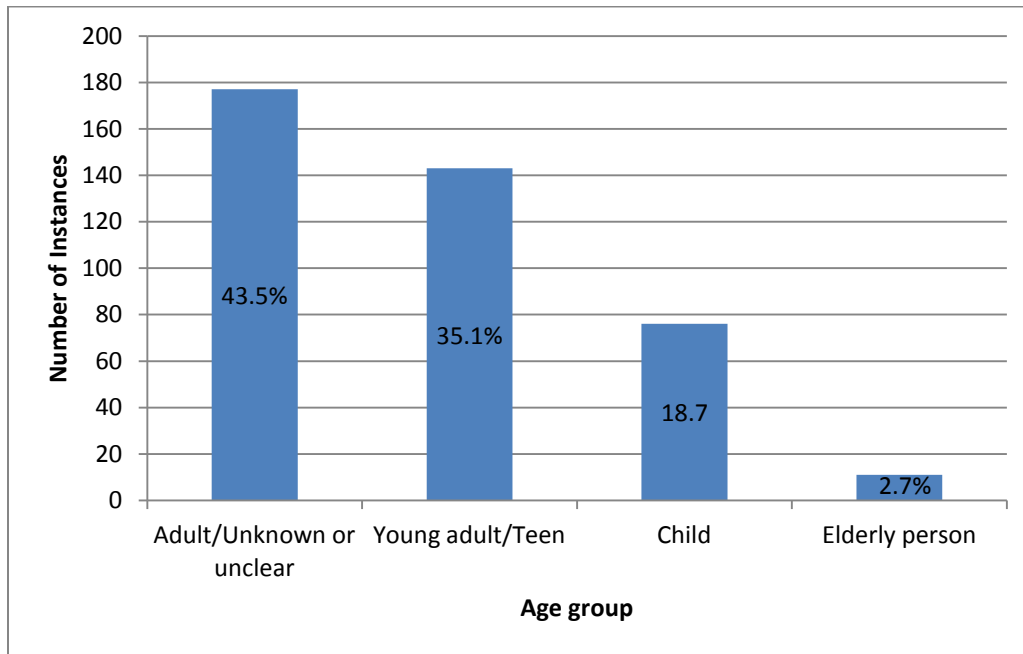


Figure 3: Representation of Age Groups

A test of chi-square revealed a significant association present between age group and gender,  $\chi^2(2, N = 390) = 23.88, p = .05$ . Cross-tabulation showed that adult males were in most of the ads, making up 31.8 percent of the total ads. Male children were shown least often, appearing in only 7.9 percent of the ads (Table 1).

There was also a relationship between the gender of the characters and their identifiable race/ethnicity,  $\chi^2(4, N = 401) = 13.74, p = .05$ . Twenty-nine percent of the characters were Caucasian or White males and 24.4 percent were Caucasian or White females. The African-American racial category had the next highest percentage of racially identifiable characters for males at 8.7 percent and the Asian category was the next highest for females, with 5.5 percent (Table 2).

Analyses showed a relationship between race/ethnicity and settings,  $\chi^2(20, N = 373) = 48.92, p = .05$ . White characters were most often depicted in the home or in settings either outdoors or sports-related. African-Americans were mostly shown outdoors or in sports-related settings. Hispanic characters were also commonly presented outdoors or in sports-related settings. Both Hispanic and Asian characters were also frequently depicted in settings that were either related to work, business, travel, or school (Table 3).

Additionally, a relationship existed between race/ethnicity and reason for usage,  $\chi^2(24, N = 372) = 51.33, p = .05$ . In comparisons of observed counts to expected counts, categories with the highest residual values elucidate which racial categories' reasons for usage were higher than expected. The residual values showed that White characters used technology for work, school, or for working towards building their future as well as for other or unknown reasons. African-Americans' purpose was to physically manipulate or transform devices. Hispanics employed technology for other reasons or for reasons that were unclear or not shown. Technology was utilized by Asians for its ability to allow people to connect, socialize, and network.

Another chi square test showed that there was an association between the variables, gender and setting,  $\chi^2(5, N = 369) = 17.97, p = .05$ . Females were most often shown (15.5%) in a domestic setting in a house, while males were most often shown (22.1%) outdoors or in a sports-related setting, such as at a sporting event or in a sports field. Females appeared the least amount of times in the "No space" category, a setting presented to be almost physically nonexistent or indeterminable. It is typically a white, black, or colored background. Females were also not often shown in a "Creative Space," a setting that is conducive to creating or is comprised of creative

elements. The purpose of the room or area is unclear as it may be used as a workplace, a store, a hobby area or room in one's home, or a learning/practice center. Males were least often shown in the “No Space” setting as well. They also did not appear often in a kitchen, shopping, or an eating area setting (Table 4).

There were no significant relationships between gender and the variables, competency (Table 5), product usage (Table 6), reason for usage (Table 7), character interaction (Table 8), or character role (Table 9). Still, the analyses were able to reveal some information about the variables. Networking and socializing were the main reasons technology was used in the ads. Most characters featured in the ads interacted with the technology products and services and were portrayed as being competent users.

## Qualitative

### *The Characteristics of Technology*

An analysis of qualitative data presents characteristics attributable to technology which stand alone and are independent of gender, age, race/ethnicity, or any other variable. The main characteristics, which arise to describe technology are power, speed, smartness, progressiveness and being social. These qualities are marketed using various techniques. However, since written or spoken words are one of the more conspicuous methods, they receive the most attention and determine the main characteristics of technology. The technology advertised is commonly lauded as being powerful. The ads make various connections to power, including associating it with

cars. For instance, the words, “It’s powerful,” (channelintel 2013) display over the engine of a classic car in an advertisement. Technology is also praised for being fast. A common technique to support a device or service’s speed is to play upbeat music, use vibrant colors, and have a quick succession of shots. Characters’ rapid movements also demonstrate speed. Technology is portrayed as being smart and functional. Technology is considered progressive or advanced. It is often emphasized as being the new trend or product. One ad tells the story of a jealous male roommate who discards his laptop after watching his roommate enjoying his new device (channelintel 2013). Another ad focuses on the disregard for an old device as it is used as a children’s play-toy and is smashed and destroyed by children (channelintel 2013). Technology is advertised as a tool for socialization that allows users to be connected with one another. For instance, in one ad social media websites are accessed and socializing is the focal point of Skype ads (internetexplorer 2012; Skype 2013).

The marketing in the ads creates linkages that can also be traced back to characteristics of power, speed, smartness, progressiveness, and being social. These prominent qualities can be applied to the space the technology occupies and to the characters that use the technology. For instance, the trait, being powerful, allows characters to be shown as becoming empowered through the use of the technology. Therefore, characters’ qualities, gender, race/ethnicity, and class are portrayed and can be interpreted under the light of technology’s attributes.

### *Characteristics Shared By All Characters*

Characters that are shown adequately using technology display to a certain extent the characteristics that reflect the central qualities of technology. They own a degree of power, move



fluidly or live fast-paced lives, are clever and resourceful, are forward-thinking, and socialize with others. While the manner and extent to which characters present these qualities differ by gender and race/ethnicity, there are some characteristics that are present in nearly all characters who are shown using technology regardless of gender or race/ethnicity. In the advertisements, technology itself is expounded as possessing power. For instance, an ad describes a device as “extremely powerful” and shows a luxurious and richly furnished library with two characters dressed in business attire engaged in conversation. The ad is linking technology with power. Power is then connected to the upper class, wealth, and participation in a white-collar occupation (Apple 2013). Nearly all of the characters in the videos who use technology belong in the upper-middle to upper classes. This is commonly conveyed through setting, which is usually modern and minimal or ornately and elegantly designed. Individuals who use technology are often shown as living fast-paced lives. One humorous ad features a couple meeting for the first time in a fancy restaurant. Within the duration of a conversation they become engaged, married, and have children beside them by the end. A voice-over claims that life moves and fast and technology should keep up (Verizon 2013). Other ads bombard the viewer with rapid shots of people moving and using their devices. They are shown engaged in life and activities, often eccentric, worldly, and creative ones. Individuality is emphasized and these ads are seemingly aimed at a niche market for those who demonstrate a youthful spirit. The eccentricity of the characters also tell that they are moving with or ahead of the times, demonstrating progressiveness. Both female and male characters of all races/ethnicities are social to an extent when they use technology for that function, although the manner in which they socialize differs. In summary, despite gender or race/ethnicity, characters that use technology are in the upper-middle to upper class level, often

shown wearing business or trendy attire. Most characters wore business attire or trendy outfits similar to hipster or soft-grunge styles. Other outfits worn by characters were neat, simple, and generic. Additionally, nearly all characters are of a lean or slender build. Characters using technology commonly live fast-paced lives, have a youthful demeanor, are progressive and forward-thinking, and social to an extent.

### *Gender Representation*

While there are qualities technology provide under which gender and race/ethnicity will be later analyzed and discussed, findings show that characters bring certain characteristics specific to their gender. How females and males are represented can be categorized according to attitude, physical interaction, and interaction with children. Attitude is operationalized as the character's apparent opinion, approach, and feelings towards technology which may be manifested in facial expressions, behavior, or comments by the character. The category of physical interaction of technology is the interaction and relationship between the character and the technology. It depicts the manner in which the gender physically handles technology. It also takes into account the physicality in using technology with and in the presence of other characters. Any objectification or sexualization will be addressed in this category. The subcategory, interaction with children, reveals the distinctive manners in which adult characters of each gender uses technology with children.

## The Representation of Female Characters

In these ads females tend to express their emotions and attitude in an open manner. Females smile more often than males do, even while only using their devices and not interacting with others either via technology or in-person. Overall, females express a broader range of emotions and are shown upset and close to tears in some instances. They are also shown as impressed by others' use of products and services. A prime example is an ad in which two females sit on either side of a male, who is holding a device. As he uses the device and flips the screen, the females outwardly are impressed and express their amazement and delight (channelintell 2013). Females communicate astonishment, wonder, and delight over technology in a more expressive and conspicuous manner than do males. Excitement and playfulness are also characteristics females display while using technology. For instance, an ad shows a series of shots displaying interactions among disparate individuals and their relationships maintained through the use of phones. Video capability on the phones allows characters to communicate intimately, often in open, public spaces. Females are shown contacting other females concerning emotional problems and a pregnancy. Females are shown giggling and acting coy, burying their heads into the bed, another person's shoulder, a wall, or just playfully moving away from the screen. Females' relationship with the phone is playful; there is a heightened sense of amazement and excitement in communicating with another person through the phone (Apple 2013). Females' attitudes toward technology may be summarized as one of wonder, amazement, and delight.

In terms of physical interaction with technology, females physically handle devices more carefully and more slowly than do males. Their touch is distinct from males' touch. Touch and

the objectification of females are found to go hand-in-hand. For instance, an ad with no visible characters present and features splashes of metallic gold liquid which moves and swirls in a black background to form a phone while upbeat music with electronic rhythms plays. A female voice vocalizes and then sings. At the words, “I want to touch you” a finger touches the phone and the rest of the words are “you’re just made for love” (Apple 2013). Another example shows a woman’s gentle handling of a device and makes an association between the woman and the device’s design. In the ad, the camera slides over parts of the laptop at different angles, alternating between moving slowly and speeding up during transitions between shots. Light music with female vocals plays. A woman in a short, dark leather, armless dress sits at a glass table. There is no discernible setting, only a copper colored background. We see her bare arms outstretched and she opens the laptop. Next there’s a shot of only her hair blowing behind her. In the next shot the camera pans up. Her folded legs, body, and arm positioned at the touchpad, along with part of the laptop, is visible. Words appear to describe the design as “stunning.” There are more shots of the camera slowly panning up the woman’s upper and lower body. We only see a part of the laptop and she gingerly moves her finger around on the touchpad. Several shots alternate between her fingers gently touching the touchpad and screen and the camera behind her, capturing only her bare arm and bare legs and the front of the laptop. The lower part of her body is then shown, with her head out and above the frame. She clutches the laptop against her body in the manner a student would a book and runs her fingers over the top of it (HP 2013).

Another example of the association between the physical appearance of a female and that of a device is an ad where the primary character is an animated, male, anthropomorphic speaker standing on top of a table. A woman in tight-fitting clothes walks, model-style, toward the table.

Most of the view of the woman in the entire ad is of her body alone. The speaker talks persuasively as he walks around the laptop and looks up at the woman. He says, “Girl, we can make some beautiful music together.” The woman sits on the couch and removes the upper half of the device. The speaker says incredulously, “She just took her top off!” The woman is using it to video chat with another young woman. The speaker comically says, “What more can a man ask for?” and “Plan the honeymoon.” The human character does not acknowledge the presence of the animated speaker as it hovers around the device, caressing it. The ad seems to make the knowledge of who the speaker is speaking about ambiguous, leaving the audience unsure if he is speaking to the human or the device as he also looks at the human character. The device may be considered as being gendered female, although it remains unanimated, and has been sexualized for the pleasure of a male character. Both the device and the women in the ad are ogled by the speaker (HP 2013).

Females’ relationships with technology involve a learning process. Females are taught by others or self-taught to use technology. An example is an ad telling the story of a young girl learning about football. The primary character in the ad is a young white, female child who is rejected from playing football with some boys in a backyard who tell her that she doesn’t “get football.” Sad and disappointed, she uses an Internet service on various devices to learn about football in an obsessive manner— eventually covering a large whiteboard with strategies. Her room and clothing transform from being child-like with stereotypical feminine qualities to one with a strictly athletic theme. In the final shots she sits with NFL commentators, being comically dwarfed in appearance, wearing a professional business suit, and speaking expertly in a serious manner concerning the current game being played in the stadium in the background. The

commentator ignores her comments directed at him and asks, “Look, are you trying to take my job?” She replies, “Maybe.” The boys from earlier are shocked to see her on their TV. The male voice-over says, “Technology that lets you play with the big boys, now that’s powerful” (Verizon 2013).

In the interaction between adult females and children with technology, females are often encouraging. They express enthusiasm, laugh, and smile while motivating the child to use the device. The female adults are usually positioned next to the child in close proximity, with the child operating the device. Either the child or the adult female holds the device. They both seem to share an enjoyable experience with technology.

Asian and Caucasian female characters were depicted as actively pursuing scientific or artistic endeavors. However, it should be noted that ads with females engaging in the scientific community commonly relays or inserts a traditionally feminine quality. For instance, one ad includes the title, “Artists” when the image shows a woman working in a scientific conducting research (Apple 2013). Another ad shows a woman taking the lead in an environmental sustainability project, which could be indicative of the caring component in stereotypical female tendencies (Microsoft 2013). There was a remarkable absence of African-American and Hispanic female characters actively engaged in the advertisements. They were often shown blurred or in fleeting shots as background characters.

## The Representation of Male Characters

A prevailing attitude expressed by males is that of confidence. Males exude confidence in their mannerisms, such as in their walk, smug facial expression, smirk, and in their tone of voice. One ad portrays a man whose confidence is the central focus of the video. In this ad, the camera follows a white, male character whose attitude and thinking is conveyed through a narrated voice-over of a smug and confident male. The setting is the inside of a middle or upper-middle class home having a children's birthday party. The camera shows the man up-close and moves with him, comically alluding to a stereotypical victory walk. His wife is seen using a laptop in the kitchen and when she sees him, she smiles, walks over, and gives him a kiss on the cheek while he continues to walk. He points and winks at someone as he walks. The voice-over jokes about letting "all that power get to your head." The man turns around to face the family and stands with his arms folded and a smug smile after using his phone and gifting devices to his children (Verizon 2013). In an analysis of overt displays of confidence, 12 of the 54 ads featured prominently confident male characters, while only one ad had a confident female character.

In comparison to females, males do not often appear detectably impressed by others' use of technology or try to downplay any such emotion. They also are not discernibly emotionally upset in ads with the exception of displaying jealousy. For example, a male character in an ad looks enviously at a colleague's device. A male voice narrates his thoughts to reveal the colleague received the new device because some coffee was spilt and ruined his old device. A young woman in the room looks incredulously at the new device and mouths the word, "wow." The narrator asks whether he is going to watch or make things happen. The main character

throws his coffee over his thick, old laptop. The narrator ends the commercial by saying, “Out with the old, in with the Ultrabook” (Dell 2013).

Rather than being detectably impressed, primary male characters strive to impress or appear clever and intelligent. In one ad, a nervous young man waiting in an office uses his phone to look up information on a painting hanging in the room in order to impress the man he is meeting (Google 2012). In another ad, a man beguiles his wife into believing he is not watching television through the use of an innovative contraption that allows him to watch television in a slot carved into his bed (xfinity 2013). In yet another ad, a child asks an adult male questions relating to the solar system. The man conceals a device he uses to look up the answers to the questions and deceives the boy who comments that the man is smart (Google 2012). Overall, males demonstrate confidence as well as strive to impress others and be deemed intelligent.

Males physically handle devices in a more assertive and aggressive manner than females do. Devices require the touch of hands and fingers and males are shown swiping screens with their touch in rapid and fluid motions. They also manipulate the devices quickly, showcasing dexterity. Dexterity is also illustrated in the agility of the bodies of males as they move around while holding devices. An example is an ad featuring several young people moving through a school setting and passing around a device. A young African-American man is handed a device by someone off-screen. He twirls and hands it to a Caucasian boy as he ascends the stairs to enter the school. Another boy runs with the device through a library. He then slides across a table where many people are sitting at and hands it to the Caucasian girl at the end of the table. She tips over in her chair with an expression of disbelief. A boy then crowd surfs over the packed bleachers of a stadium. The device tips over and the boy falls down. The crowd looks worried,



but the boy stands up and holds the device triumphantly in the air. Although the ad features a female shown actively moving with the device, the males are performing more vigorous feats (HP 2012).

Males' interactions with technology reveal a level of control. Control is indicated through body language in interacting with other characters and technology. Males are often shown as enfolding females. This position is when the male is slightly behind a person, usually a female in these ads, with an arm wrapped around her. Another way in which males are shown to exert control is by being the one to use the technology. An example that consists of both indications of control is an ad with a female primary character. As the female narrates, the audience receives glimpses of a blurred image of a man in the background. At one point, the back of her head and the display on the device is shown when the man walks past her. He has a bounce in his step and motions with his head for her to follow him. He is sitting on a couch and she is seen sitting down next to him, carrying the Ultrabook, which she then opens. As she begins to use it, the man reaches over to quickly flip the screen, causing it to spin into place. She immediately stops typing when he moves his hand toward the device and pulls her hands back. After snapping the screen into place, he takes the device from the woman. He now holds it and presses a button to play a video. The man puts his arm around the woman and she moves closer with her hands clasped together, resting her head on his shoulder (channelintel 2013).

Males' interaction with children also reveals an element of control. Unlike females, males are not shown allowing children to use devices. Instead, they research information and operate the technology themselves. They may exhibit the screen for the child to see but are often shown holding the device. Because of this they are not active motivators.

While ads featuring African-American male characters portrayed these characters in similar ways to male characters classified under the other racial categories, there were some notable differences. African-American males were shown more often than Caucasian males in the background with non-speaking roles. Overall, Caucasian males were illustrated as more competent with technology than African-American males. In one ad, a standing Caucasian male explains the technology's services and how to use them on devices to an African-American male character sitting beside him. The ad and characters are cartoon drawings in black "ink". The ad delivers the message of simplicity and practicality; it insinuates that with a little basic knowledge and information the technology is easy to use. The monotone, almost sarcastic tone of the Caucasian man indicates a sense of self-confidence and that he is bragging about his multi-tasking abilities and knowledge. The white male's default expression is smug while the African-American's default face is slightly bewildered with elevated eyebrows and an open mouth. Additionally, the only ad with a Hispanic lead character presented a Hispanic male driving a company van on his way to install Internet service in customers' homes. Asian males were often shown in either artistic ventures or in educational fields.

## DISCUSSION

The findings reveal that many of the conventional perspectives and beliefs regarding gender and technology are currently being reflected in technology advertisements today. This research establishes that adult, male characters are highly represented in technology advertisements. These ads also maintain some of the socially constructed traditional roles and characteristics of men and women. Women are not often seen in creative settings, but make the most appearances in a home and domestic setting. On the other hand, males are less often featured in the home. Instead, they are present outdoors or in sport-related settings. These findings uphold a cultural belief regarding women's role in the home and the association between males and active roles outdoors. Twenty-three of the fifty-four ads utilize a male-only perspective, while only eight of the ads feature a female's perspective.

Technology itself is portrayed as reflecting the qualities of power, speed, smartness, progressiveness, and social connectivity. Interactions, or lack thereof, form connections between the characters and these characteristics. Those who use technology on the screen are often depicted as being empowered, have a love for engaging in life in a fast-paced manner, and are able to enjoy recreational time and activities. Of course, this available time restricts the users to those in the upper-middle to upper classes in the advertisements. The appearances of users include a slim body-type and they have a sleek look, not unlike the products. They have a youthful and energetic approach to life, often being younger than middle-aged or older adults.

The association between males and physical ability is a component of masculinity society has established. Physical ability is also connected with strength, power, speed, and ability or

skill. The advertisements market this aspect of masculinity, molding it to fit their needs and the products and services' functionality. For instance, it is reduced to showing males quickly manipulating devices while females use a gentler, more slower and careful touch. However, physical ability and power are not necessarily regarded as being physical strength and bigness in physical size. It is associated with, wealth, ambition, and youthful energy.

These technologies advertised are inherently and somewhat fragile items, which could logically be deemed as appropriate according to the culturally perceived delicateness and gentleness of feminine hands. However, the fragility of the technology has been converted into requiring not a delicate touch but a skillful hand. Male users are shown as experts as they confidently operate devices in quick, fluid motions, often swiping, spinning, flipping, and snapping parts together. In this way it seems that any traditionally feminine quality is displaced by a requirement for competency and knowledge— conventionally masculine attributes.

Males are shown to be more in control, enfolding others, taking and using products in the presence of others, and also being the provider of these products and services. They exude confidence with a bombastic tone, smug remarks and facial expressions, and other mannerisms. Women approach technology with amazement. Their reaction is a stark contrast to males' who strive to appear already knowledgeable and comfortable with technology. In ads where females use technology to communicate with others, feminine humbleness becomes intermixed with the “superficial” pleasure in being visually displayed and the sole attention they receive from it. Females often display childlike innocence and wonder in using devices to video chat with others. These devices require the user to be conspicuously displayed and heard. Users are physically framed, often up-close within the screen of the phone. This “bold” activity and behavior

counteracts with the traditionally “proper” feminine behavior. The female characters in the video use the phone in a manner that displays their coyness and portray an almost childlike guilty pleasure in using it. They seem fascinated with this tool that “forces” them, suggested by the manner in which they move away from the phone, such as by burying their heads into the softness of beds or others or leaning away and against a wall, to engage in this behavior. Yet, females enjoy using technology immensely to communicate emotions, life experiences, and receive attention from another person distanced from them (Apple 2013).

While there are ads whose depictions of African-American male characters are similar to the depictions of Caucasian male characters, it is apparent marketers are aiming their technology products and services at young, upper-middle to upper class Caucasian men. This target market is represented through the characters shown in the advertisements. It can be argued that when technology’s positive qualities are embodied in the Caucasian male characters, as they are in these ads, society is instructed to view upper-middle to upper class, Caucasian males as possessing the best relationship with technology in comparison to any other social group. They are illustrated as inherently having the most skill and highest level of competence with technology. In accordance with Goffman’s (1977) and West’s and Zimmerman’s (1987) theories, viewers will learn from and model their interaction and relationships with technology based on these representations. It can be deduced that current technology video advertisements and the performances instigated or supported by the ads will reinforce old stereotypes and help in perpetuating gender disparities within the technology field.

## Limitations of Study

There are several limitations to this study. The sample may not be entirely and accurately generalizable to the overall population of technology marketing. This is because the sample of advertisements is not large and is selected according to certain specific criteria. The research is prone to issues of validity and reliability as the researcher must make decisions and interpretations. Future studies may take a broader and more inclusive approach in studying the topic of gender and technology in order to avoid focusing on a gender binary. To do this, they may examine various forms of technology marketing, including online advertisements and the engagement in social media by technology companies.

## APPENDIX A: CODING SHEET AND CODEBOOK

## CODING SHEET

Character ID:

Commercial ID:

Total number of characters:

Product type:

Gender:

1. Female
2. Male
3. Unknown

Age:

1. Adult/Unknown or unclear
2. Young adult/Teen
3. Child
4. Elderly person

Race/Ethnicity:

1. White/Caucasian
2. Black/African-American
3. Hispanic
4. Asian or Pacific Islander
5. Other/Unknown

Setting:

1. Home
2. Kitchen/Shopping/Eating place
3. Work/Business/Travel/School
4. No space
5. Other/Unclear
6. Creative Space
7. Outdoors/Sports-related



Voice over:

1. Female
2. Male

Competency:

1. Expert/Adequate
2. Confused, incompetent
3. Unknown

Product usage:

1. Proactive, physical handling
2. Light usage/ Observing, acknowledging
3. Not used/Unseen, unclear

Reasons for usage:

1. Problem solving/Educate
2. Manipulating, personalizing, transforming tech.
3. Creating
4. Entertainment
5. For work/school/future
6. Networking/Socializing/Connecting/Sharing
7. Other/Unknown

Character interaction:

1. Technology
2. Environment

Character role:

1. Primary character
2. Supporting character

Marital status:

1. Unknown
2. Single
3. Married

Focal length:

1. Long
2. Medium
3. Close-up

Angle:

1. Eye-level
2. Low-angle shot
3. High-angle shot

**Comments:**

## CODEBOOK

Unit of data collection: Character or narrating voice present in the video who is not part of a crowd of characters. May be parts of the body belonging to one character if the full character is not visible and is important to the video.

Character ID: Indicates the number assigned to the character.

Commercial ID: Indicates the video advertisement.

Total number of characters: The counted number of characters in one video. May be estimated.

Product type: The product or service being advertised.

Gender: Indicates the perceived gender of the character, following standards according to what is considered to be the social norm.

1. Female: The character appears to present itself and display characteristics commonly belonging to or associated with the female gender.
2. Male: The character appears to present itself and display characteristics commonly belonging to or associated with the male gender.

Age: The perceived age group into which the character falls.

1. Adult: Estimated to be in the age group between 30 and 55 or 60, Unknown/Unclear: Age cannot be determined or is difficult to identify.
2. Young adult: Between the ages 18 and 30. Teen: Between the ages 13 to 17.
3. Child: 12 and under.
4. Elderly person: Over 60.

Race/Ethnicity: The perceived race/ethnicity of the character.

1. White/Caucasian: White, non-Hispanic characters of European descent.
2. Black/African-American: Black, or of Black African descent.
3. Hispanic: of Spain, Latin America, or other Spanish descent.
4. Asian/Pacific Islander: of Asian, South Asian subcontinent, or Pacific Islands.
5. Other/Unknown: Race/ethnicity is not Caucasian, African-American, or Hispanic or race is ambiguous/unidentifiable.

Setting: The predominant area in which the message, story, or narrative unfolds.

1. Home/shopping: Setting in close approximation to living quarters, may be the inside of a home.
2. Kitchen/Shopping/Eating place: Setting in close approximation to a shopping area. May be inside of a store. An area where customers may buy and consume food and beverages.
3. Work: An area that implies a workplace setting. Business/Travel: An area indicating a workplace or business/office/conference room setting. A space that facilitates traveling and public transport, such as an airport, a bus, or a train. School: Education-related area,

including higher education.

4. No space: A setting presented to be almost physically nonexistent or indeterminable. Typically a white, black, or colored background.

5. Other/Unclear: The setting cannot be determined or does not fall under one of the categories listed.

6. Creative Space: A setting that is conducive to creating or is comprised of creative elements. The purpose of the room or area is unclear as it may be used as a workplace, a store, a hobby area or room in one's home, a learning/practice center, or for any other unclear and possible purposes.

7. Outside/Outdoors: Any area outside of a building. Sports-related: Any setting associated with sports, such as stadiums, athletic fields, and race tracks.

Voice over: The voice heard, often narrative, not seen and unaccompanied by a physical presence.

1. Female: The voice can be ascribed as belonging to the female gender.

2. Male: The voice can be ascribed as belonging to the male gender.

Competency: The ability-level to appropriately use the technology.

1. Expert: Knowledgeable and familiar with technology. Able to use it effortlessly and without hesitation. Adequate: A regular user who is able to use the technology.

2. Confused, incompetent: A user who is not proficient with the technology and struggles with using and understanding it.

4. Unknown: User's ability is not determined.

Product usage: The manner in which the technology is being used.

1. Proactive, physical handling: The user is physically handling the technology and using it intensely.

2. Light usage: The user is using the product but may not be as involved.

Observing/acknowledging: Character is not using the product but is aware of its presence.

3. Not used: Character is not using product and does not care or acknowledge it.

Unseen/Unclear: It is difficult to determine whether or not the product is being used and the manner in which it is being used.

Reasons for usage: The implied purpose of using or interacting with the product.

1. Problem solving: Resolve issues. Educate: Learning or teaching others how to use.

2. Manipulating, personalizing, transforming tech: The character influences the technology and adjusts it to the way the character wants.

3. Creating: The technology aids in making something.

4. Entertainment: Technology used for enjoyment and amusement. Examples include watching movies, TV shows, and sports and playing games.

5. For work/school/future: Technology is used as a tool and advantage towards furthering character in his/her education, work, or future.

6. Networking/Socializing/Connecting/Sharing/Emailing: Activities that involve connecting or communicating with others.

7. Other: Purposes that are not listed here. Unknown: The purpose is not clear.

Character interaction: The persons, objects, or setting the character encounters and interacts with.

1. Technology: The character interacts with the technology product or service in some way.
2. Environment: The character interacts with some part of the environment or background.
3. Other characters: The character comes into contact with, speaks, performs actions, or interacts in some way with other characters.

Character role: The indicated part the character plays in the video.

1. Primary character/center of story: The character is the subject or center of the commercial.
2. Supporting primary character: The character aids the primary character. Background with speaking/action part: The character has an active role but does not support the main character and is considered as being in the background. Background without speaking/action part: The character does not have an active role, does not support the main character, and is considered as being in the background.

Marital status: The indicated marital status of the character.

1. Unknown: The marital status cannot be assumed.
2. Single: The character appears to be unmarried.
3. Married: The character has a spouse.

Focal length: The estimated distance from the lens of the camera to the character.

1. Long: A full or wide shot that shows the entire body of the character.
2. Medium: A medium distance between the long and close-up shots. Partial views and appearance from the waist up are often medium shots.
3. Close-up: A tight and zoomed-in shot of the character.

Angle: The camera's position in relation to the character.

1. Eye-level: A normal angle where the camera is positioned at eye-level to the character.
2. Low-angle shot: Camera is below the character and angled upwards.
3. High-angle shot: Camera is above the character and angled down towards the character.

## APPENDIX B: TABLES

Table 1: Percentages of Gender Representation by Age Group.

Gender	Age			Total
	Adult	Young Adult/Teen	Child	
Female	12.8 (50)	18.5 (72)	10.8 (42)	42.1
Male	31.8 (124)	18.2 (71)	7.9 (31)	57.9
Total	44.6 (174)	36.7 (143)	18.7 (73)	100.00
Chi Square	23.88*			
*p<.05				

Note: Number in parentheses are total number of characters in each category.

Table 2: Percentages of Gender Representation by Race/Ethnicity.

Gender	Race/Ethnicity					Total
	Caucasian	African-American	Hispanic	Asian/Pac Islander	Other/Unknown	
Female	24.4 (98)	4.7(19)	0.2 (1)	5.5 (22)	7.0 (28)	41.9
Male	29.4 (118)	8.7 (35)	1.7 (7)	3.5 (14)	14.7 (59)	58.1
Total	53.9 (216)	13.5 (54)	2.0 (8)	9.0 (36)	21.7 (87)	100
Chi Square	13.74*					
*p<.05						

Note: Number in parentheses are total number of characters in each category.

Table 3: Percentages of Race/Ethnicity Representation by Setting.

Race	Setting						Total
	Home	Kitchen/Shopping	Work/Travel/School	No Space	Creative Space	Outdoors	
White	18.2 (68)	3.5(13)	12.1 (45)	1.3 (5)	2.9 (11)	19.8 (74)	57.9
Black	3.2 (12)	1.9 (7)	2.4 (9)	0.3 (1)	0.8 (3)	5.4 (20)	13.9
	0.3(1)			0.0(0)	0.3(1)	0.8(3)	
Hispanic	2.4(9)	0.0(0)	0.8(3)	0.3(1)	1.6(6)	2.1(8)	2.1
Asian	2.9(11)	0.0(0)	3.5(13)	2.7(10)	1.3(5)	4.6(17)	9.9
Other		0.5(2)	4.0(15)				16.1
Total	27.1 (101)	5.9 (22)	22.8 (85)	4.6 (17)	7.0 (26)	33.7 (122)	100
Chi Square	48.92*						
*p<.05							

Note: Number in parentheses are total number of characters in each category.

Table 4: Percentages of Gender Representation by Setting.

Gender	Setting						Total
	Home	Kitchen/Shopping	Work/Travel/School	No Space	Creative Space	Outdoors	
Female	15.5 (57)	3.3(12)	9.3 (34)	2.7 (10)	2.7 (10)	11.2 (41)	44.7
Male	11.4 (42)	2.5 (9)	13.6 (50)	1.4 (5)	4.4 (16)	22.1 (81)	55.3
Total	27.0 (99)	5.7 (21)	22.9 (84)	4.1 (15)	7.1 (26)	33.2 (122)	100

Chi Square 17.97\*

\*p<.05

Note: Number in parentheses are total number of characters in each category.

Table 5: Percentages of Gender Representation by Competency Level.

Gender	Competency			Total
	Expert/Adequate	Confused/Incompetent	Unknown	
Female	24.9 (91)	2.5(9)	17.2 (63)	44.5
Male	33.3 (122)	1.1 (4)	21.0 (77)	55.5
Total	58.2 (213)	3.6 (13)	38.3 (140)	100

Chi Square 3.51

\*p<.05

Note: Number in parentheses are total number of characters in each category.

Table 6: Percentages of Gender Representation by Product Usage.

Gender	Product Usage			Total
	Proactive/Physical	Light/Observing	Not used/Unseen	
Female	21.3 (78)	11.7 (43)	11.5 (42)	44.5
Male	30.3 (111)	9.3 (34)	15.8 (58)	55.5
Total	51.6 (189)	21.0 (77)	27.3 (100)	100.00

Chi Square 5.06

\*p<.05

Note: Number in parentheses are total number of characters in each category.



Table 7: Percentages of Gender Representation by Reason for Usage.

Gender	Reason for Usage							Total
	Problem solving	Manipulate	Creating	Entertainment	Work/School	Social	Other/Unknown	
Female	2.5 (9)	1.4(5)	2.7 (10)	4.1 (15)	4.1 (15)	16.9 (62)	12.8 (47)	44.5
Male	4.1 (15)	3.6 (13)	0.8 (3)	5.5 (20)	6.0 (22)	16.1 (59)	19.4 (71)	55.5
Total	6.6 (24)	4.9 (18)	3.6 (13)	9.6 (35)	10.1 (37)	33.1 (121)	32.2 (118)	100

Chi Square 11.59

\*p<.05

Note: Number in parentheses are total number of characters in each category.

Table 8: Percentages of Gender Representation by Character Interaction.

Gender	Character Interaction			Total
	Technology	Environment	Other characters	
Female	26.0 (95)	5.2 (19)	13.4 (49)	44.5
Male	33.6 (123)	9.3 (34)	12.6 (46)	55.5
Total	59.6 (218)	14.5 (53)	26.0 (95)	100.00

Chi Square 3.61

\*p<.05

Note: Number in parentheses are total number of characters in each category.

Table 9: Percentages of Gender Representation by Character Role.

Gender	Character Role		Total
	Primary	Supporting	
Female	25.7 (94)	18.9 (69)	44.5
Male	34.4 (126)	21.0 (77)	55.5
Total	60.1 (220)	39.9 (146)	100.00

Chi Square .73

\*p<.05

Note: Number in parentheses are total number of characters in each category.

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