2022

AI and Gender in Persuasion: Using Chatbots to Prevent Driving Under The Influence of Marijuana

Victoria Halfacre
victoria.halfacre@siu.edu

AI AND GENDER IN PERSUASION: USING CHATBOTS TO PREVENT DRIVING UNDER THE INFLUENCE OF MARIJUANA

by

Victoria L. Halfacre

B.F.A., Southern Illinois University, 2010

A Research Paper
Submitted in Partial Fulfillment of the Requirements for the
Master of Science

School of Mass Communications and Media Arts
in the Graduate School
Southern Illinois University Carbondale
December 2022

RESEARCH PAPER APPROVAL

AI AND GENDER IN PERSUASION: USING CHATBOTS TO PREVENT DRIVING UNDER THE INFLUENCE OF MARIJUANA

by

Victoria Halfacre

A Research Paper Submitted in Partial

Fulfillment of the Requirements

for the Degree of

Master of Science

in the field of Professional Media and Media Management

Approved by:

Dr. Yuhosua Ryoo Chair

Graduate School
Southern Illinois University Carbondale
November 7, 2022

AN ABSTRACT OF THE RESEARCH PAPER OF

Victoria Halfacre, for the Master of Science degree in Professional Media and Media Management, presented on November 7, 2022, at Southern Illinois University Carbondale.

TITLE: AI AND GENDER IN PERSUASION: USING CHATBOTS TO PREVENT DRIVING UNDER THE INFLUENCE OF MARIJUANA

MAJOR PROFESSOR: Dr. Yuhosua Ryoo

Will new media techniques, such as artificial intelligence (AI), help refresh public safety advertising campaigns and help better target specific populations, and aid in persuasive, preventative marketing? This paper used hypocrisy induction as a persuasive tool for standalone artificial intelligence chatbots to test potential behavioral change in the context of marijuana. This research further tested whether the chatbots' gender and language styles impact how persuasive and effective the chat agents are perceived to be using hypocrisy induction. An online experiment conducted with 705 participants (*M*age = 42.9, 392 women). where participants interact with a chatbot that is manipulated as male/female and uses formal/causal language. Half of the participants received the hypocrisy induction manipulation. hypocrisy induction is more effective when chatbot gender and linguistic styles are appropriately paired. Participants in the hypocrisy induction condition exhibited higher WTP than those in the non-hypocrisy induction condition when the chatbot they interacted with was female in gender and used casual language. However, hypocrisy induction increased WTP than those who did not receive the hypocrisy induction manipulation when the gender of the chatbot they interacted with was male and used formal language. To the researchers' knowledge, this is among the first studies testing the persuasive power of hypocrisy induction using new media platforms in public safety and health advertising in marijuana studies. Findings not only help to shed light on the persuasiveness of

gender and language in standalone chatbots but also provide practical implications for practitioners on the future usage of chatbots.

KEY WORDS: Hypocrisy induction, persuasion, artificial intelligence, chat agent, gender, language style, marijuana, guilt, regulatory focus

TABLE OF CONTENTS

LIST OF FIGURES

FIGURE PAGE

CHAPTER 1

INTRODUCTION

Will new media techniques, such as artificial intelligence (AI), help refresh public safety advertising campaigns and help better target specific populations, and aid in persuasive, preventative marketing? As more individuals spend time online via computers and phones, a chatbot, or software that can converse with a person using natural human language, (Griol et al., 2013), is emerged as an effective communication agent for delivering Public Safety Announcements (PSA) if incorporated into integrated advertising campaigns. The particular interest of this research is marijuana prohibition while driving since Public Safety and Health sectors in many states find difficulty in developing new ways to education and encourage people to comply with marijuana prohibition laws while driving.

According to the National Survey on Drug Use and Health, in 2018, 20.5 million people aged 16 or older drove under the influence of alcohol in the past year, and 12.6 million drove under the influence of illicit drugs (Carson, 2015; NIDA, 2019). The same survey showed that men are more likely to drive under the influence of drugs or alcohol than women. Also, higher percentages of young adults aged 21 to 25 drive after taking drugs or drinking than young adults aged 16 to 20 or 26 or older (Center for Behavioral Health Statistics and Quality, 2019). Drugs affect an individual's driving skills differ depending on how they act in the brain. Marijuana can slow reaction time, impair the judgment of time and distance, and decrease coordination (NIDA, 2019). Many anti-drugged driving groups state, "Drugged driving, just like drunk driving, is 100 percent preventable (Metzgar, 2016)".

National polls consistently show that roughly two-thirds of United States citizens support marijuana legalization, most of whom are young voters (Fertig, 2022). 37 states have established

medical marijuana programs and 19 states now allow anyone at least 21 years old to possess and use marijuana, including Illinois, the only state to use a standard legislative bill instead of a public referendum. For instance, House Bill 1438 in the state of Illinois became effective January 1, 2020, and is considered one of the more comprehensive and "equity-centric" laws to legalize the use of marijuana for adults age 21 and older (Illinois.gov, 2019*).* The Illinois Department of Revenue projects that the cannabis industry will generate over $57 million in tax revenue and licensing fees of $253.5 million in FY22, $323.5 million in FY23, and $375.5 million in FY24.

Even with the legalization of marijuana, there are still restrictions on age and amounts used and where it should be consumed (Metzgar, 2016). In particular, state, local and federal laws strictly prohibit Driving under the Influence of Drugs (DUID) or drugged driving. These government sectors struggle with what constitutes a ticket for Driving Under the Influence of Drugs (DUID) and how and have difficulty prosecuting the illegal activity consistently. Local governments and prosecutors find it more challenging to identify and convict drugged drivers than drunken drivers. (Breitenbach, 2015) Currently, there is no definitive test to determine whether an individual is impaired. Unlike breath and blood tests used to determine blood alcohol levels, no measurements can clearly indicate a motorist's marijuana intoxication levels at the time of an incident or traffic stop. Instead, the effectiveness of these tests comes into question (Breitenbach, 2015, Metzgar, 2016). The laws regarding drugged driving differ from state to state, and many individuals are ignorant of the consequences for both public and personal safety and the legal consequences of being caught while driving under the influence of marijuana.

Many will agree that the best efforts to prevent unnecessary accidents caused by impaired driving from marijuana start with making individuals aware of the effects of the drug and the consequences of their actions should they choose to drive under the influence of marijuana. In

this regard, the state of Illinois allots for each fiscal year, 8%, or a projected $25,880,000 of those funds will be allocated to the Local Government Distributive Fund to support crime prevention programs, training, and interdiction efforts, including detection, enforcement, and prevention efforts, relating to the illegal cannabis market and driving under the influence of cannabis (Salustro, 2020). Additionally, 2% or $6,470,000 of funds will be used for the Drug Treatment Fund to fund public education campaigns and to support data collection and analysis of the public health impacts of legalizing the recreational use of cannabis (Cannabis Regulation and Tax Act, Illinois, 2019; Salustro, 2020). It is presumed that when, not if, the U.S. Federal government does repeal marijuana prohibition, similar funding pools will be created to study and educate on the effects of marijuana consumption.

While the federal government has set aside funding to develop campaigns that remain proactive in informing and persuading individuals to maintain safe and legal habits when consuming marijuana, and state governing bodies, like that of Illinois (Cannabis Regulation and Tax Act, Illinois, 2019; Salustro, 2020), many of these campaigns and efforts are ineffective or go unnoticed (The Rooster, 2014). Anti-marijuana campaigns in the past have been based on fear tactics and sensational advertising, which for the most part, did not work (The Rooster, 2014). Today we notice a shift in society towards more education-based programs starting at young ages to keep children from beginning high-risk-taking behaviors before they start.

This study will work to benefit efforts towards preventing drugged driving. In this study, it is proposed that a chatbot could help aid public safety and education campaigns and target specific groups to change their behaviors using the power of self-assessment. This research will test the persuasiveness of hypocrisy induction through new media platforms of standalone AI chatbots to help inform and generate positive behavioral change and keep drug-impaired

individuals from getting behind the wheel at all. Hypocrisy induction is a persuasive technique that calls on users to reflect on their own past actions to change their current and future behavior towards more preferred prosocial behavior (Aronson et al. 1991, Baek, Yoon, and Kim 2015; Fointiat, Morisot, and Pakuszewski 2008; Kim et al. 2017; Kim et al. 2021; Kim and Ryoo 2022; Stone et al. 1994) To the researchers' knowledge, however, no studies are available testing hypocrisy induction in the context of marijuana. Therefore, the first goal of this research is to examine whether chatbots can persuade individuals against driving under the influence of marijuana using hypocrisy induction.

The second goal of this research is to test if the chatbots' humanness factors, such as gender and language style, can help to improve the effectiveness of AI-driven, chatbots in encouraging and educating safe driving habits. While there is a wealth of knowledge in the fields of gender and persuasion in human-computer interaction (Baylor and Kim, 2004; Borau et al. 2020; De Angeli et al. 2006; Griol et al., 2013*;* Takeuchi et al. 2000; Liu et al. 2008; Nguyen et al. 2007; Siegal et al. 2009; Zamora), and many explore the impacts of gender and gender stereotypes applied to chatbots (Bigman and Gray, 2019; Castelo et al., 2019; Longoni et al., 2019; Borau and Bonnefon, 2020; Brahnam, 2009; Pinna, 2020; van den Hende and Mugge, 2014) most studies are more closely related to customer service chat agents, and none cover persuasion against illicit behavior such as driving under the influence of marijuana. Additionally, how an advertising campaign and its components "speak" to their target audience can significantly impact its effectiveness, especially in persuading individuals to change behavior. Our study will test if formal or casual language could further push the effectiveness of gender and persuasiveness using hypocrisy induction. Each of the current fields of study of gender and linguistic persuasion styles in AI has a wealth of knowledge. However there are

many competing findings (Bigman and Gray, 2019; Borau and Bonnefon, 2020; Castelo et al., 2019; Longoni et al., 2019; Siegal et al. 2009) and many do not combine these aspects as variables or moderators (Ryoo et al. 2017; Kim and Ryoo, 2020; in press). Of the vast body of knowledge currently available in each of these areas, little work has been done in marijuana or public safety, public health marketing. While according to the United Nations 2019 publication, *"The Woment's Rights and Gender Section,"* gender stereo types are widely viewed as negative. The goals of this study is to possibly give reason to focus and capitalize on finding the most effective gender and language style combination when using persuasion. This combination, as it will be discussed further in this paper, could perform better with audience targeting in public health campaigns to help prevent unnecessary casualties and damages from driving while under the influence of marijuana.

Particularly, our testing of gender and linguistic styles of chatbots helps to develop the most effective way to persuade individuals to maintain or adopt prosocial behavior that causes individuals to choose not to drive while under the influence of marijuana. Theoretically, our attempt addresses Borau et al. (2020) suggestion that, before a company puts an AI chat agent on the market, it should verify that it displays the appropriate amount of artificial humanness to be effective within the context of its use.

CHAPTER 2

THEORETICAL BACKGROUND

A. PERSUASION AND ARTIFICIAL INTELLIGENCE AGENTS

Artificial intelligence is reshaping media and advertising, and communications at an alarming rate. A *chatbot is* software that can converse with a person using natural human language, usually over the internet or via a smartphone (Griol et al., 2013). Chatbots are found on social media platforms such as Facebook and Twitter and through messaging apps like Whatsapp, Skype, and Facebook Messenger. Many businesses utilize a chat agent on corporate websites and incorporate the bot's communication style, look, and persona into their multi-faceted marketing campaigns and overall brand (Lee, 2020). AI-driven Chatbots and service agents are ingrained in mainstream culture across the globe that people in industrialized countries can interact with or reference at multiple points on any given day. We now see standalone chatbots that assist with customer service or conversation in the healthcare, business, finance, and hospitality industries (Grand View Research, 2022). With that in mind, we argue that a standalone chatbot could pose an asset in multi-faceted marketing campaigns related to public health and safety. Our research will help to indicate if AI helps reach new audiences and persuade them to practice safe driving and marijuana consumption habits.

Chatbots also replace humans in customer service and sales-related realms at increasing rates globally (Ryoo and Kim, 2020). The market for chatbots is growing globally, with an estimated reach of USD 3.99 billion by 2030 (Grand View Research, 2022*),* as reflected in the number of users and chatbot interactions. As far back as the 2018 state of chatbot report found that 12% of US online users reported having communicated with chatbots during the last 12 months (Drift, 2018), which has undoubtedly increased through the Covid-19 pandemic and the

post-pandemic era. In many cases, AI can be more cost-effective and reliable than employing human agents. That brings forward a need to develop new solutions to common issues, like lack of trust in an artificial intelligence agent. Consumers tend to trust humans more than AI in specific situations (Berkeley et al., 2015; Bigman and Gray, 2018; Hidalgo et al., 2020). For instance, consumers are reluctant to use AI-provided healthcare services (Longoni et al., 2019), retail stores, hotels, and restaurants (Bigman and Gray, 2019; Castelo et al., 2019). Nevertheless, Grand View Research indicates chatbots are applied in various industries, including healthcare, retail, business, finance, insurance services, media and entertainment, travel and tourism, and e-commerce. They predict an expected increase in use for each sector by 2030, with e-commerce having the most market share as of 2021 at 20%.

How do marketers build trust in AI to attain desired results, whether providing service, persuading a purchase, or suggesting behavioral change? People are expected to doubt or feel reluctant to accept an agent's decision or the information the agent provides or be convinced of the agent's persuasion because they cannot validate the agent's trustworthiness. Experimental studies focusing on the nature and the effectiveness of social persuasion in HCI environments in the early 2000s found that social factors, such as affiliation, authority, and conformity, were taken into account in interface agent design (Takeuchi et al., 2001). An additional experiment by Nguyen et al. (2007) suggested that dialog-based systems with the visual appearance of a conversational agent are preferred over systems that use text only because they are perceived to be more personal and caring, less tedious, and somewhat easier to follow. This information could confirm why many companies choose to humanize AI to make the human to computer interaction easier for the person.

Gass et al. argues that "persuasion involves one or more persons who are engaged in creating, reinforcing, modifying, or extinguishing beliefs, attitudes, intentions, motivations and behaviors within the constraints of a given communication context." Siegal et al. (2009) further included this concept of persuasion with human-to-robot and human-to-computer interaction by claiming that appropriate persuasiveness, designed to benefit people and improve interaction, has far-reaching implications in HRI and HCI. They explored how the gender of a humanoid robot affected its ability to influence human behavior and how it is perceived along three dimensions: trust, credibility, and engagement. They believed these traits were essential for a persuasive communicator and were necessary for aiding a robot's ability to achieve compliance. The study found that a cross-gender effect was marginally significant across the three dimensions of credibility, trust, and engagement. Meaning, that men rated the female robot higher in all categories, and women rated the male robot higher in all categories of credibility, trust, and engagement. We choose to test these three traits through persuasive linguistic stylings. As our experiment will involve something closely related to healthcare or public health and safety, we chose to continue with Liu et al. (2008)’s design model for developing a persuasive agent. We will utilize communication skill-relevant dimensions of agreeableness, anthropomorphism, informativity, and persuasiveness within the visual and linguistic styles of each of our chat agents.

The following sections show how gender and language styles shown in AI-driven agents, as two other moderators, impact the persuasiveness of hypocrisy induction in a public safety campaign of preventing driving while under the influence of marijuana. Assessment of these various literature bodies helped develop several theories and instinctive predictions about the results of this exploratory research. As mentioned earlier, Pew Research indicates chatbots are

widely present in healthcare, retail, and e-commerce and are expected to grow to a nearly four billion USD industry (2022). The marijuana industry is part of both the healthcare and retail industries. We theorize that AI-driven chat agents promoting safe driving habits using the hypocrisy induction process to educate and persuade will be valuable in preventing driving under the influence of drugs. Both sectors could utilize this tool in collaborative efforts between public safety and private business industries to build preventative campaigns as an effective persuasive technique through a human-to-computer interaction simulation in a public health safety and health subject.

B. ARTIFICIAL INTELLIGENCE AND GENDER BIAS

Recent studies discuss anthropomorphism in chatbots and how human users respond to them. Ryoo and Kim helped prove the need for anthropomorphization when using hypocrisy induction in chatbot scenarios (2020). This study will continue research into human-computer interaction with humanized chatbots in persuasive advertising. Specifically, the study will provide further evidence of the persuasive capacities of male and female gendered AI in marketing (Borau and Bonnefon, 2020; Pinna, 2020; Van den Hende and Mugge, 2014). Recent findings suggest that female bots are perceived as more human than male bots because women are generally perceived as "more human" than men (Borau et al., 2021). The ideal characteristics used to humanize a chatbot are those assigned to a stereotypical female human being (i.e., warm, friendly, and the capacity to experience emotions) (Eagly & Steffen, 1984; Ebert et al., 2014). These are the same characteristics we as humans seek in trustworthy AI (Eyssel & Hegel, 2012; Gustavsson, 2005; Otterbacher & Talias, 2017; Stroessner & Benitez, 2019). This is one of the many reasons AI displays female gendered cues through visual, sound, or physical characteristics.

The researcher questions, are female or male chatbots more persuasive in changing human behavior? It is widely acknowledged that female chatbots can prove more effective when they perform tasks requiring emotional intelligence. Men are attributed to lacking the capacity to feel emotions but are perceived as conventionally intelligent, which is projected onto AI with male-gender cues. In the scenario we display, the chatbots will require perceived emotional intelligence often attributed to women and rational intelligence attributed to men (Borau et al., 2021, Eyssel & Hegel, 2012; Sweeney, 2014). Visual and language cues regarding trust using hypocrisy induction when promoting a public health/safety campaign relating to marijuana usage and driving, especially with negative implications of gender stereotypes.

Gendering bots, primarily females, allows for negative implications. In today's industries, female gendered chatbots outnumber males, even in popular culture. For example, Amazon's Alexa, Apple's Siri, and Microsoft's Cortana are all female-gendered AI chat agents tasked with serving and assisting users. Even the concept and name of Cortana were pulled directly from a popular video game, Halo, now owned by Microsoft, in which Cortana was an AI entity tasked with serving the Master Chief. Even Jarvis from the Marvel Comic Universe was developed into a different story arc and replaced with Friday, another female service AI. The overabundance of female-gendered bots further objectifies women and could increase the perception that women belong in subservient, service-related roles (UNESCO, 2019). In direct contrast, it exacerbates stereotypes that men are perceived as lacking the ability to convey emotions or unable to excel in caregiving and service-related roles. A gendered bot can also add numerous complications for practitioners as individuals can judge the trustworthiness of the bot based on attractiveness, especially female bots, which can imply negative physical biases related to women. This can also cause poor behavior and attacks toward the AI agents. In contrast, if the bot is overly-humanized

in appearance or language style, it can arouse negative feelings for viewers and users (Seigal et al., 2009; Chavez and Gerosa, 2021). These judgments can significantly impact how successfully the chat agent achieves the task it implements.

Is it possible to break perceived social norms and place male AI entities in service roles to bring successful equity into persuasive AI technology? Some findings throughout HCI and HRI research have found potential opportunities for success in persuasive male AI in the service realm. For instance, in research conducted by Seigel et al. (2009), a relationship between robot gender and subject gender showed a contrast to widespread assumptions of people to comply with the matching effect. Across the three subjective measures - credibility, trust, and engagement – they noted a cross-gender effect, wherein men preferred the female robot and women preferred the male robot within their experiments. The matching effect refers to the tendency for people to be more easily persuaded by similar others or members of their in-group (Cialdini et al., 2003, Gass et al., 2018). This tendency was also proven in studies in similar, more relevant technologies of virtual humans in immersive virtual environments (IVEs) (Guadagno et al., 2007), a predecessor to VR headsets and the metaverse, a budding new technical stronghold today.

Globally, advertisers are attempting to break societal norms and gender biases creatively within advertising to develop more equitable and inclusive advertising campaigns that appeal to and send positive messaging to broader audiences. Gender norms in the United States are being challenged in communities, fueling marketers to find new creative ways to appeal to the masses of US citizens, yet we rarely see this in PSA’s. Research into addressing social norms could help to push for dynamic advertising that would make Public Safety Announcements more

personalized and able to better speak to the audiences they serve. It is one small step for men and women to move past gender biases.

Stereotypes as a cognitive structure contain knowledge, expectations, and beliefs about a social category (Hamilton & Trolier, 1986). Gender stereotypes are generalized views or preconceptions about attributes or characteristics that are or ought to be possessed by women and men or the roles that are or should be performed by men and women. Gender stereotypes are powerful and instilled at a young age across all cultures. Children are confronted with references to their own and others' genders and frequently reminded of appropriate and inappropriate behaviors related to gender. (Mackie, Hamilton, Susskind and Rosselli 1996; United Nations, 2014). Gender Stereotypes can be perceived and intended as both positive and negative. Examples of positive gender stereotypes include "women are nurturing" and "men are strong." (United Nations, 2014). While these stereotypes are seemingly positive, they can have the opposite effect. For instance, if women are viewed as nurturing, men can be perceived as not nurturing, when that is not always the case. The same can be said for strength; if a man is viewed as strong, a woman could be not-strong. Alternatively, if a man challenges the stereotype by lacking strength, it also brings negative perceptions due to the normative beliefs brought on by common gender stereotypes. Gender stereotypes, at their core, are a belief that could cause one to make assumptions about women and men. In contrast, gender stereotyping is the practice of applying that stereotypical belief to a person. (United Nations, 2014) Today, many gender-based stereotypes develop into social biases that impact social structures. According to Eagly and Mladinic (1994), positive stereotypical female traits, are highly valued and may make people's attitudes more positive toward women who play traditional roles or work in lower-status jobs than toward men who conform to their gender roles.

Using natural language at the human-computer interface elicits anthropomorphism (Brahnam, 2009; De Angeli, Johnson, and Coventry, 2001; Epley, Waytz, and John Cacioppo, 2007). Following a cognitive process of inductive inferences, users attribute to chat agents, even disembodied ones, humanlike characteristics, motivations, and intentions, and an often-assumed gender. Evidence shows that gender presentations set up expectations that impact user experiences with the agent (Baylor & Kim, 2004; Moreno et al., 2002). This includes communication style differences between men and women and how they can affect the trustworthiness of the AI. Communication style differences between men and women have been extensively studied in face-to-face settings (Mulac, Lundell, & Bradac, 1986; Steckler & Rosenthal, 1985; Tannen, 1998) and computer-mediated environments (Herring, 2000). Women are generally documented to be warmer, facilitate and encourage conversation more than men (Dindia and Allen, 1992). This can be applied to human-to-human and human-to-computer interactions, as female is the predominant gender in AI.

C. CHATBOTS GENDER AND LANGUAGE

Human-Computer interaction using a disembodied conversational agent that uses text-based environments to engage with users is not a new concept. The origin of the chatbot concept dates back to 1950 with Turing (Turing,1950). Among the first agents were ELIZA (Weizenbaum, 1966) and ALICE (Wallace, 2009), and the main goals of these chatbots were to mimic human conversation. Chatbots now can have distinct and diverse characteristics (Chavez and Geroza, 2021), help with automated tasks, and perform tasks often based on the company or agency producing the AI. Noticeably, chatbots and chat agents, when anthropomorphized, have remained predominantly female in gender. When a chat agent is tasked with persuading a user, how does gender affect its task? Ischen et al. (2021) found that the mere presence of a chatbot as

the source of communication is not sufficient to increase human likeness and proposed further study into linguistic elements like the formality of language, including professionalism and politeness, to the strength of attributions of humanlike characteristics (Nass et al., 1995). We predict that manipulating the formality versus the casualness of professional conversation styles will be a deciding factor in building trust towards the chatbot and will thus affect the persuasiveness of the disembodied AI entity.

When a chatbot acts "too machine-like," it is often given sub-standard ratings by users (Jenkins et al., 2007). When a chatbot is "too machine-like," it refers to the language style being too formal, having no personality, or not showing enough of a naturalistic language style that is likened to human-to-human interaction. Morrissey and Kirakowski (2013) found that the formal grammatical and syntactical abilities of a chatbot were the most significant discriminators between good and poor functioning chatbots when they analyzed "naturalness" in AI chatbots. Additionally, a 2021 study by Chavez and Gerosa suggests chatbots should use consistent grammar and spelling to avoid confusion and not combine different language styles. For example, a 2017 study by Duijst found that most users thought it was strange to see emojis combined with certain levels of formal linguistic styles. Some participants in recent studies have been observed criticizing chatbots when a more formal language or unusual vocabulary was implemented because typically general-purpose chatbots focus on casual interactions (Kiradowski and Yiu et al., 2009, Chaves & Gerosa, 2018; Duijst, 2017; Zamora, 2017). A 2002 study by Morris suggests that believable chatbots need to display unique characters through linguistic choices.

In support of this statement, a study by Mairesse and Walker demonstrated that language patterns could express personality (2009). One significant factor that plays a major role in the

trustworthiness of a chatbot is manners. Manners refer to the ability of a chatbot to manifest polite behavior and conversational habits (Morrissey & Kirakowski, 2013). This suggestion also aligns with Liu, Wahlstedt, and Helfenstein's design model for developing a persuasive agent (2018). When chat agent has good manners, they appear polite and agreeable. Politeness and manners are broad terms in which the notions can differ across cultures (Watts, 2003). With a chatbot using artificial intelligence algorithms, manners are usually shown by adopting speech acts such as greetings, apologies, and closings (Jain, Kumar, et al., 2018) and making interactions more personal (Jain et al., 2018). The use of manners can potentially reduce feelings of annoyance and frustration that could lead to failures in the interaction (Jain et al.,2018), no matter the context. Research has revealed the personality traits stereotypically attributed to men and women when describing the genders. Males are considered aggressive, forceful, competent, sexual, and independent, while women are described as kind, helpful, warm, and communicative. This holds across cultures (Williams & Best, 1990; Williams, Satterwhite, & Best, 1999). This belief in human stereotypes likely carries over to gendered chat agents. It could be why female chatbots, incorporating politeness and manners, come across as more believable and have a better chance of building a user's trust.

With these findings in mind, our study will test formal language styles against more casual ones to determine which could aid in the efficiency of inducing self-awareness as a persuasive technique. As Chaves and Gerosa (2021) have suggested, we will maintain a consistent language style while keeping our chat agents polite and maintaining a show of manners. We will test if a male (female) chat agent is perceived as more trustworthy and effective using a formal (casual) language style. To avoid confusion and inconsistency, our chat agents will not use emojis as users could find the context inappropriate and reduce the

effectiveness of the chat agent and induce hypocrisy as a persuasive technique to educate and convince individuals to avoid driving while under the influence of marijuana. Our findings could help add to the growing body of knowledge about gender and AI and how it can effectively persuade behavioral change.

Gendered social scripts are related to the stereotypical personality traits of both genders. For example, men are expected to take a dominant role in social interaction and exhibit more competence. Women are expected to be more subservient (Carli, 1999). A CASA study examining whether gender stereotypes extend to machines exhibiting gender cues found male-voiced computers rated more proficient than females (Nass, Moon, and Green, 1997). The researchers concluded that "the tendency to gender-stereotype is not only deeply ingrained but can be triggered by minimal gender cues, even when disembodied AI holds those cues." Conversely, Monterey found significant evidence that a female speaker was consistently rated more confident than a male speaker (2005). This study will also help determine if the chatbot's language style, whether formal or more casual, can help persuade individuals to change their behavior by way of hypocrisy induction. Little research is available on how hypocrisy induction is affected by how a researcher, or in this case, a chatbot, speaks to the participants.

Recent studies, including those by Bui, suggest that the difference theory could play a role in why women's language styles in advertising are so different from men's when promoting similar products. The opinion of this tendency supports a "positive" attitude towards women's speech with many analyses of special features in the female language in comparison with men's words. One of the hypotheses proving the idea that women were more cooperative and sympathetic than men was suggested by Kalcik (1975); thanks to their "gentle" verbal behaviors, the humor and connections among speakers are tied (Bui, 2021).

Social scripts applied to women versus men confound gender with status (Ridgeway & Bourg, 2004; West, 1998). Men, especially middle-aged white men, have more prestige, money, and power, whereas women worldwide have lower social status. Carli observes, "race, class, education, age, occupation, physical attractiveness, and gender can act as diffuse status characteristics of a person that are used, particularly in the absence of specific information, to access [a person's] competence, ability, or value" Carli (1990) Lakoff's (1975) seminal work relates gender differences in language use to differential access to social power. His studies show that these concepts taken from human-to-human interaction can play vital roles in how our chatbot will be treated when a user interacts. Our goal is to test if a specific gender is deemed more trustworthy than the other and prove more successful at convincing individuals to advocate and self-reflect on the situation our bot gives them. It could be that the female chatbot could garner more interaction and engagement. It has been noted in several bodies of research that people tend to smile more and self-disclose more while talking to women (Dindia and Allen, 1992; Hinsz & Tomhave, 1991; Roter, Hall, and Aoki, 2002), which could prove beneficial to hypocrisy induction. However, similar studies note that men are interrupted less and treated less assertively than women. This behavior could imply that the informative nature of our chatbot could be better digested if a male chatbot were to deliver it. This data is also noted in the report by Lakoff (1975), who reports that people listen to men more than women. He claims that this is because women lack authority because they are perceived as marginal and generally have lower social status than men.

With these concepts in mind, we question if a perceived woman's influence on visual and language cues could impact the effectiveness of hypocrisy induction-based persuasive techniques through a dis-embodied, text-based, artificially intelligent chat agent. Additionally, we seek to

examine the social norms by determining whether a perceived woman (man) speaking in a more professional distant tone can have a higher impact than if a woman were to have more casual speech or written linguistic patterns. Furthermore, how can the trend-worthy technology of chat agents speaking in these specific language styles and genders will affect health-related public-safety advertising campaigns?

D. HYPOCRISY INDUCTION, CHATBOTS' GENDER AND LINGUISTIC STYLES

Fear-based advertising is a predominant tactic used to promote anti-drug consumption by indicating the legal and physical adverse effects, thus "scaring" individuals from the behaviors. One of the most prominent examples of fear-based adverting against drug use is Nancy Reagan's "Just Say No" campaign, which was part of the larger "War on Drugs." The campaign had little-to-no effect on drug use rates, was often satirized, and eventually became a culturally appropriated fashion icon. Research shows that fear-based advertising campaigns can catch attention but fail to keep it because the advertising is primarily referral-based. Moreover, it is difficult to refer a dark, complicated concept to another (Boulder, 2014) and even harder using an AI chat agent. Likely because fear tactics in advertising are far too direct and heavy-handed and often cause psychological reactance or denial instead of inducing the desirable behavior (Ryoo et al. 2017; Kim and Ryoo, 2020 and 2022, Baek, Yoon, and Kim, 2015; Callister et al., 2021; Erceg-Hurn and Steed, 2011; Kim et al., 2017; Kok et al., 2018; Van Steenburg, 2020; Wolburg, 2006; Yoon et al., 2021). The question to ask is, what persuasive tactics can aid in promoting prosocial behaviors with marijuana consumption? With public opinion changing and as more states legalize the substance in some forms, we must look for new ways to promote safe behaviors with cannabis and THC use. We predict that hypocrisy induction could be a more practical alternative to traditional approaches that have not always proved fruitful (Aronson and

O'Leary 1982; Devine et al. 1999; Gawronski and Strack 2004; Gonzales, Aronson, and Costanzo 1988; Pallack, Cook, and Sullivan 1980; Tanford and Montgomery 2015). As stated previously, cannabis legalization legislation, funds will be allocated towards public safety education campaigns related to safe and legal use; as with legalization, promoting legal behavior is essential.

Legal punishment combined with monetary fines and fees relies strongly on external deterrents and is often ineffective (Ramayah et al. 2009; Williams, Nicholas, and Rowlands 2010). Additionally, these legal deterrents are not considered equitable, and marginalized populations suffer from our nation's legal systems, especially in the case of marijuana consumption and possession. According to the ACLU research report, *A Tale of Two Countries: Racially Targeted Arrests in the Era of Marijuana Reform,* Black people are 3.64 times more likely than white people to be arrested for marijuana possession, notwithstanding comparable usage rates (Engle, 2019). The increasing number of states legalizing or decriminalizing marijuana has not reduced national trends in racial disparities, which have remained unchanged since 2010. On average, states that have legalized marijuana possession had lower racial disparities in possession arrests in 2018 compared to states that have only decriminalized and where marijuana remains illegal (Edwards et al., 2020). Hypocrisy induction makes individuals aware of their transgressions. As self-awareness builds, individuals are motivated to modify their behaviors and attitudes without backfire (Baek, Yoon, and Kim 2015; Fointiat, Morisot, and Pakuszewski 2008; Kim et al. 2017; Kim et al. 2021; Kim and Ryoo 2022; Stone et al. 1994), a stark contrast to Fear-based advertising tactics.

This paper theorizes that hypocrisy induction could be an effective persuasion technique in adopting prosocial behavior based on its proven usefulness in high-risk alcohol behaviors

(Hammons, 2010), traffic safety (Fointiat et al., 2001, 2011), and in persuading compliance to Covid-19 CDC public safety guidelines (Kim and Ryoo, 2022). The study conducted by Kim and Ryoo (2020) brought hypocrisy induction as a persuasion tool into new media and technology advertising facets using chatbots. The current research will continue to determine the effectiveness of hypocrisy induction as a persuasion technique using chatbots in healthcare and public safety-related advertising. To the knowledge of our researchers, no published studies are explored the effectiveness of hypocrisy induction in the field of marijuana. Likely because marijuana is a Schedule 1 controlled substance under the Controlled Substance Act (CSA). CSA states that distributing, using, or selling marijuana is considered a federal crime in the United States (FindLaw, 2019), Thus making marijuana a problematic substance to study in behavioral and applied psychology. However, since 2011, many states in the US have been creating laws legalizing marijuana for medical or recreational use. As of 2022, at least 21 states have allowed the use, distribution, and sale of marijuana. Currently, marijuana legalization is a highly politicized and debated topic. Current speculation indicates that marijuana could be reclassified under a different CSA Schedule or legalized in some way throughout the United States on the Federal level. Thus, performing studies on prosocial and low-risk marijuana consumption behaviors is more critical than ever. Studies related to advertising and prevention can help policymakers in public health sectors develop new techniques to ensure safe communities and reach targeted audiences appropriately and effectively.

First proposed in 1991 by Aronson, Fried, and Stone (1991), the hypocrisy induction paradigm proved helpful in encouraging young college students to use condoms. In that first published study, Aronson and his colleagues developed a sequential process for inducing hypocrisy and causing cognitive dissonance (Aronson et al. l, 1991). They based their theories

and methodologies on the fact that cognitive dissonance causes enough distress to motivate behavioral and attitude change. Further research into the hypocrisy paradigm helped to refine and confirm the process into two steps (Fointiat, 2001). Over the past thirty years, hypocrisy induction procedures have been tested and proven at least moderately effective in the fields of water conservation (Dickerson et al., 1992), alcohol usage (Hammons, 2010), traffic safety (Fointiat et al. l 2001), Covid-19 social distancing (Ryoo, Kim 2020). As stated by Dickerson and her colleagues, policymakers frequently attempt to modify behavior in a community by instituting information-based persuasive campaigns in the form of poster campaigns, strategically placed signage and posters, commercials, and other traditional media (Dickerson et al. 1992). This study will continue the methods developed by Kim and Ryoo (2020 and 2021) by utilizing a new media format of a standalone chatbot within our experiment. Chatbots are now a widely identifiable artificial intelligence tool used across various customer service sectors. Our study adds to the growing body of research that tests artificial intelligence and human-computer interaction (HCI) and branches into the public safety and health awareness sectors.

The process of hypocrisy induction in the past has helped to prove the process is effective in persuading individuals to adopt more desirable behavior based solely on self-assessment of past transgressions. However, there are some noticeable gaps in research. Many ignore gender as a variable in the process, nor is the difference in effect covered between genders. For instance, two studies conducted in 2004 and 2011 using hypocrisy induction to determine a behavioral change in traffic safety disproportionately recruited women as participants. In the 2004 study, Fointiat sought to refine the process of hypocrisy induction into a combination of two factors. One, advocating a position that an individual supports, and two, being made mindful of failures to act under their previous advocacy (2004). This study also included factors of self-integrity

threatening and strengthening conditions and proved that free choice was essential. While this study did indeed help to define a refined process of inducing perceived behavioral change through hypocrisy induction, and proving so through commitment. Gender differences never played a role in the research. Only housewives aged 18 to 60 were asked to participate in the study (Fointiat, 2004). Choosing this demographic was likely convenient for the researchers at the time; not seeking opinions and determining behaviors of men in that same locale made the results less generalized. Our exploratory research attempts to close the gap by providing additional insights into using hypocrisy induction in traffic safety by ensuring both genders are recruited. In the 2011 study, Fointiat and colleagues again tested hypocrisy induction in road safety. They studied misattribution and its role in hypocrisy induction, dissonance, and behavioral change (Fointiat et al., 2011). Their results proved their hypothesis; however, their method recruited was skewed. Only the pretest recruited men in equal numbers to women, and the final test recruited women only. Neither test divulged the gender of the experimenters. We argue that gender in both tests could have affected the results. What if the experimenter was a man speaking to only women, or what if the experimenter was a woman speaking to women? Could that have played a role in if hypocrisy induction was effective?

Hypocrisy induction studies are similar in that participants are invited to advocate socially desirable behaviors before they are made aware that they have transgressed against a normative standard. Participants then experience cognitive dissonance and are motivated to resolve the discomfort by aligning future behavior with their advocacy (Stone and Fernandez 2008). The 2020 experiments by Ryoo and Kim used a chatbot in their experiment to determine if hypocrisy induction could prove an effective means of promoting health guidelines during the Covid-19 pandemic. They tested the anthropomorphism of chatbots, proved their necessity when

using the process of hypocrisy induction, and showed successful results for perceived positive behavioral change in users so they would comply with Covid-19 safety parameters. They showed that the chatbots that appeared "too machine-like" in both language and visual cues failed to convey perceived meaningful behavioral change (Ryoo and Kim, 2020). Their test recruited equal numbers of men and women but only considered a male-gendered name for the anthropomorphized chatbot. The humanized robot also featured eyes and an upturned mouth, which are shown to be necessary for creating a trustworthy face for robots (Siegal et al., 2009). As we continue some aspects of their previous research, we question if a female chatbot could have caused more significant results than the male chatbot. We draw on a variety of bodies of literature to develop several theories and instinctive predictions about the results of this exploratory research. As mentioned earlier Pew Research indicates chatbots are widely present in healthcare, retail and e-commerce and expected to grow to a near four billion USD industry. The marijuana industry is part of both healthcare and retail industries. We theorize that a chat agent promoting safe driving habits and will be a useful tool in preventing driving under the influence for retail and healthcare sectors and establish a new tool in the public safety industry in building preventative campaigns.

The induced-hypocrisy paradigm is based on cognitive dissonance theory, which plainly states that when a person preaches one thing but does another, the person experiences feelings of dissonance (Aronson, 1992, 1999). Hypocrisy induction is achieved by illustrating the gap between what a person knows he or she should do in a specific situation, that is, their socially desired behaviors, and what he or she did, in other words, their transgressions (Fointiat et al., 2019). Hypocrisy induction implies a process or procedure of completing two factors. One, advocating a prosocial position, and two, being mindful of the failures to behave according to

said advocacy. These two steps, in theory, should cause an individual to feel dissonance or guilt towards their hypocritical behavior and (a) commit to change or (b) the opposite, in which they deny or ignore the behavior and continue to act in a way that is against the social norm (Fointiat et al., 2019), thereby alleviating the hypocrisy induction effect. These two behaviors, both a, and b, are most likely observable consumer reactions following the self-attributed hypocrisy induction effect, but most research on hypocrisy induction is gravitated toward demonstrating the approach of hypocrisy induction – changing behavior, neglecting the alternative way of dealing with the negative feelings evoked by the process of hypocrisy induction – avoidance and disassociation from negative situations. They only exception is the work by Ryoo and Kim (in press) where regulatory focus was drawn as a moderator, explaining these varying responses to hypocrisy induction.

Since hypocrisy induction is shown to be an effective technique in the fields of traffic safety (Fointiat et al., 2011), promoting public safety measures (Kim, Ryoo, 2021), and alcohol consumption (Hammons, 2010),), we predict that there will be equal success in solidifying the adoption of prosocial behavior regarding driving under the influence of marijuana through the power of self-awareness and self-reflection. The researcher's first hypothesis:

H1: The hypocrisy Induction will be effective when female (male) chatbots use casual (formal) languages.

Previous research shows female gendered chat agents implied emotional intelligence and were more successful than male gendered chatbots men (Borau et al., 2021, Eyssel & Hegel, 2012; Sweeney, 2014). Conversely, since our study also requires informative behavior that could show an air of authority, we predict the male chat agent using formal language stylings

will also prove successful. This act requires the perception of conventional intelligent projected onto our AI men (Borau et al., 2021, Eyssel & Hegel, 2012; Sweeney, 2014).

In many cases, this dissonance appears in the form of guilt. Ryoo and Kim's study in 2022 found guilt to be an effective moderator in their hypocrisy induction. Feelings of guilt are often considered negative emotions. However, in the case of this research, feelings of guilt can be perceived as a positive outcome. The psychological discomfort of guilt indicates recognition of transgressions and hypocritical tendencies and can also be predictive of adopting more socially acceptable behavior (Kim and Ryoo, 2022). Guilt could be an effective moderator when testing the persuasive nature of gender as it is perceived to require emotional intelligence. Which women are implied to have and men are considered not as capable.

Considering recent research findings indicating the overall effectiveness of female-gendered chatbots, this could be a significant factor in convincing individuals to comply with driving safely and preventing accidents related to marijuana intoxication while driving.
Will this study experience a matching, where people respond to beings that they feel are similar to them, possibly in gender, race, ethnicity, since this effect is well documented and widely accepted as common. Or will we see similar results to Seigal et all's 2009 study that documented opposite events? The second Hypothesis;

H2: The matching effect of chatbots' gender and linguistic styles in hypocrisy induction will be mediated by enhanced guilt. Based on extensive research indicating that hypocrisy induction is a technique requiring implied emotional intelligence and calls for self-reflection-based guilt instead of punishment, fear and shame (Ryoo et al. 2017) It is entirely possible that guilt will prove to be a vital moderator for effectively showing a user's will to participate as it did in previous studies by Ryoo et al. (2017) and Kim and Ryoo (2022)

CHAPTER 3

METHOD

Our exploratory research will be in the form of an online pilot study testing two independent variables of gender and language styles on the effectiveness of hypocrisy induction in a new media setting (a standalone chat agent). Within our experimental design is a series of videos showing a fictional human-to-computer experience using a standalone anthropormophized chatbot sing controlled independent variables of gender and professional linguistic styles. We will recruit voluntary participants via Amazon Mechanical Turk (Amazon MTurk) to ensure a broad spectrum of individuals within in our target audience.

A. PARTICIPANTS AND DESIGN

The experiment was a 2 (hypocrisy induction: yes vs. no) × 2 (Gender of chatbots: female vs. male) × 2 (Linguistic styles: casual vs. formal) between-subjects design. A total of 705 participants ranging in age from 21 to 77 (M_{age} = 42.9, 392 women) were recruited from Amazon's MTurk and randomly assigned to an experimental condition. See Figure 1 for the conceptual design of the study.

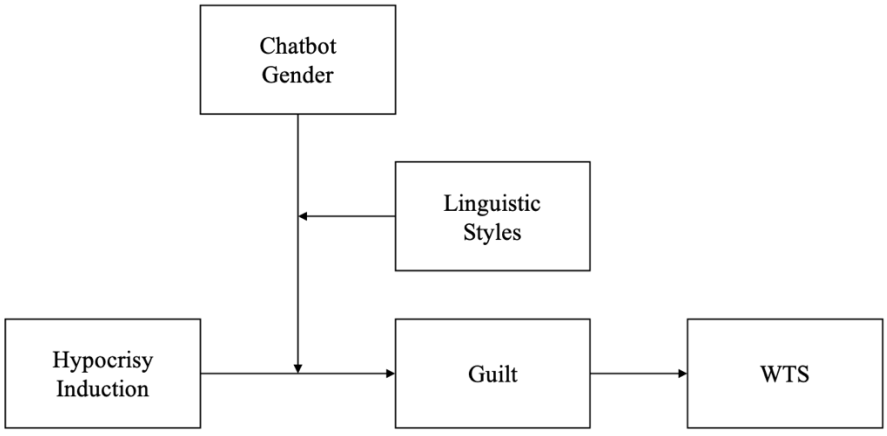


Figure 1. Conceptual design of the study

B. PROCEDURES

Participants began by completing a consent question and being informed of the purpose of the study. They were told to imagine participating in a hypothetical experience with a standalone chat agent. Participants were served one of four different videos at random to test the persuasiveness of hypocrisy induction while simulating a conversation with an AI chat agent using the independent variables of language style and gender.

Anthropomorphism, or the humanization of a non-human object, proved essential in the hypocrisy induction process when using AI. Ryoo and Kim's study conducted in 2021 regarding chatbot scenarios using images only (Ryoo and Kim, 2021), so we continued with that concept. To test gender, we depicted an anthropomorphized chat agent in two ways, a male gender and a female gender. The genders are discernable in two ways, through name; the female chat agent was named Jenny, and the male chat agent was John. The second visual cue to show gender is in the faces of the two disembodied chat agents. The female chatbot was depicted with long eyelashes, red lips, an open mouth, a slightly upturned smile (see figure 2), and glasses. At the same time, the male had an open mouth, a slightly upturned smile with no lips, and black hair visible with no visible eyelashes behind glasses (see figure 3).

Figure 2. Female Chat Agen

Figure 3. Male Chat Agent

Both gendered chatbots were then assigned two more independent variables; a casual written language style or a more formal written language style within the context of maintaining

a professional customer service standard of being positive and informative (a reference to literature). The formal language style variable features precise punctuation, correct grammar, larger words, and a more distant way of writing/speaking. The casual language style featured more lax and even incorrect punctuation and grammar (a practice contradicting some of Chavez and Gerosa (2020) smaller words, and a slightly more friendly and familiar way of writing/speaking. Both language styles exclude emojis, acronyms, abbreviations, curse words, or inappropriate language to maintain professionalism in customer service agents, both human and non-human while speaking to as inclusive of an English-speaking U.S. Population as possible within the experiment.

Participants were asked to voluntarily participate in the survey, in which they were informed of the subject matter. Participants were randomly assigned each independent variable, male or female gendered chatbot, casual or formal written language style, hypocrisy induction, or a control question. A 30-second video was displayed, and viewers were directed to press play and watch. They were then exposed to greetings from one of the four assigned variables (casual/female bot, casual/male bot, formal/female bot, and formal/male bot) and exposure to the type of linguistic style they were randomly served. This video served as an informational video to build awareness of the subject. The agents delivered facts about the health and safety effects of marijuana and the legal implications of driving under the influence of drugs in the United States and explained the dangers of harm in doing so. (See figures 4-7 on page 29)

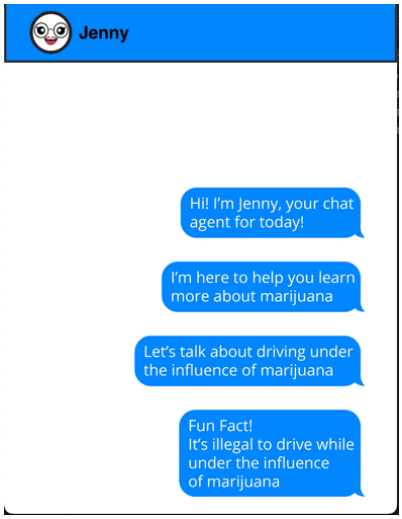


Figure 4. Video 1-female-casual

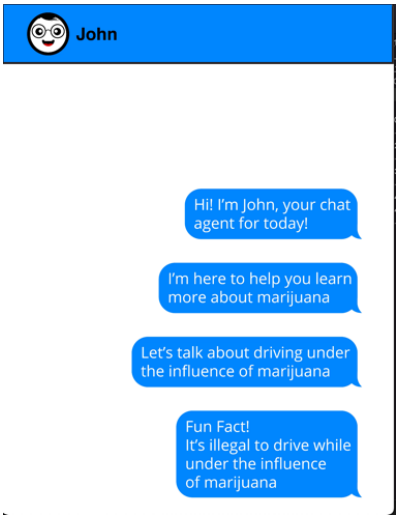


Figure 5. Video 1-male casual

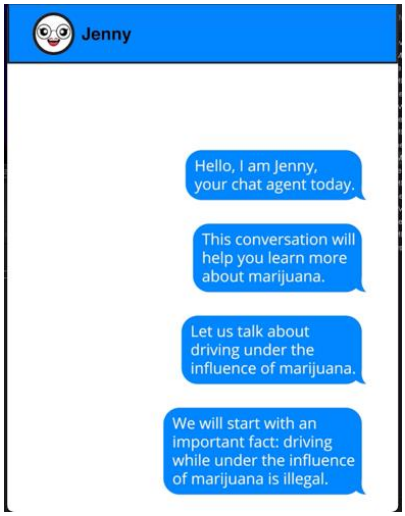


Figure 6. Video 1-female formal

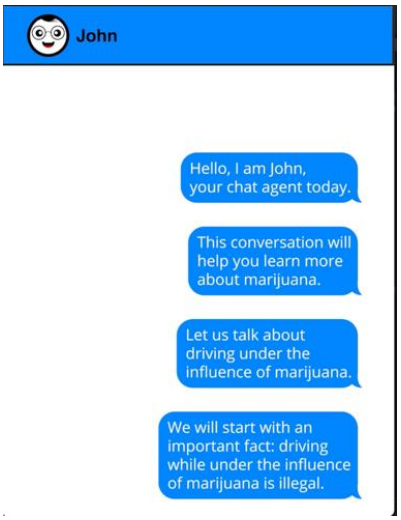


Figure 7. Video 1-male formal

The second 12-second video individuals watched requested remarks encouraging safe driving habits (i.e., advocating for the desired behavior) to be used in later campaigns promoting anti-drugged driving called "STAY ALIVE, DON'T DRIVE HIGH" (see figures 8-11 on page 30). It should be noted that the gender and language style variables within the videos remained the same for each randomly assigned participant throughout the survey.

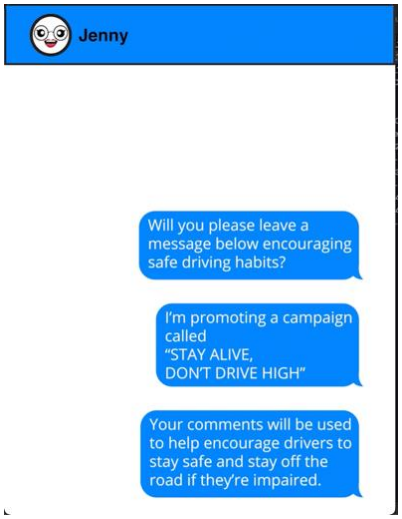


Figure 8. Video 2-female-casual

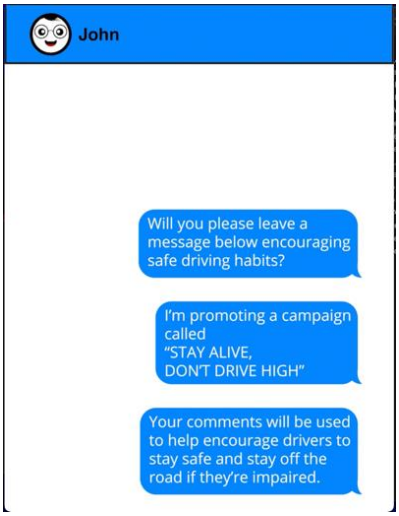


Figure 9. Video 2-male-casual

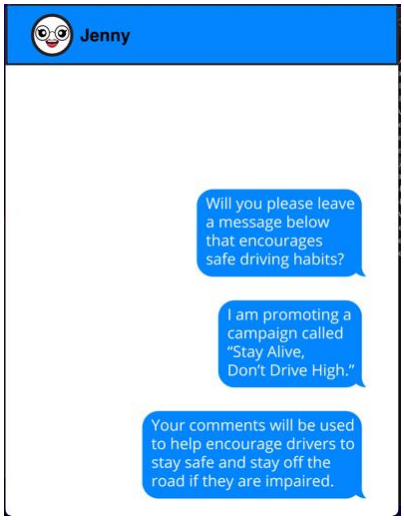


Figure 10. Video 2-female-formal

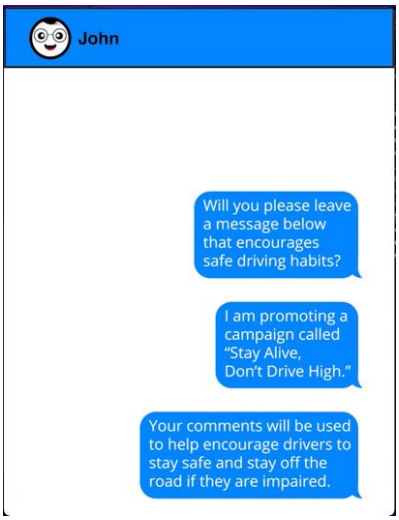


Figure 11. Video 2-male-formal

After leaving remarks for question two, the participants answered questions about the language style (I felt the chat agent's messages were formally written, I felt the chat agent spoke professionally, the messages were friendly and familiar feeling, the chat agent conversed in a way that I can relate and understand, whether they thought the experience would be positive and if a chat agent like the scenario they were testing for would benefit public safety) on a 7-point

Likert-type scale (strongly disagree-strongly agree). The last questions regarding the chat agents' delivery were a bipolar matrix that questioned the influence, compulsion, and persuasion of chat agents' perceived traits (confidence, empathy, assertiveness, and boldness) (Montrey, 2005).

Questions testing the effectiveness of hypocrisy induction or a control question were served next. Those randomly assigned to the control were asked what they ate over two days in an open-ended question. Individuals randomly assigned to hypocrisy induction questions began with questions calling for them to recall any past behavior related to driving while under the influence of marijuana. These were dichotomous questions, with an option for "prefer not to answer." These questions included; have you ever driven under the influence of marijuana, ridden in a car with someone known to be high, attempted to stop someone from driving under the influence of marijuana, or paid attention to someone that chose to do it. After recalling possible transgressions, individuals were asked a series of questions on a Lickert-type scale (strongly disagree-strongly agree) indicating they were aware of their behavior and if it was ethical or inconsistent with what they should be doing if they felt guilt, shame, embarrassment, or humiliation about their past behavior.

The third section of the survey showed a 30-second final video in which individuals were reminded of the chatbots name and requested to participate further and promote the "STAY ALIVE, DON'T DRIVE HIGH" campaign by downloading an image to print and distribute in their local area. (see figures 12 and 13) The results of the final step of this survey help to represent an individual's willingness to participate (WTP) and show a link between chat agent persuasion via hypocrisy induction and behavioral change. Participants were then given a second, closer look at the posters in which the variables testing regulatory focus theory were served. One image stated a prevention-focused message of "Keep you and those around you

safe," and the other featured a promotion-focused message of "Keep you and those around you out of trouble." (see figures 14 and 15). Individuals were then asked how likely they were to participate in, or support the campaign if they felt the advertising showed a want to prevent bad occurrences and caring about positive (negative) occurrences using a different 7-point Likert-type scale (extremely unlikely -extremely likely).

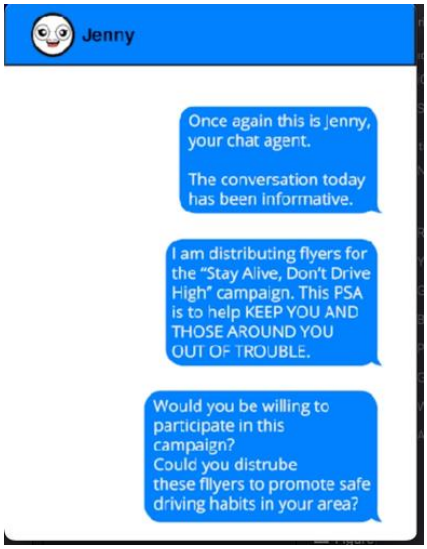


Figure 12. Video 3 Female

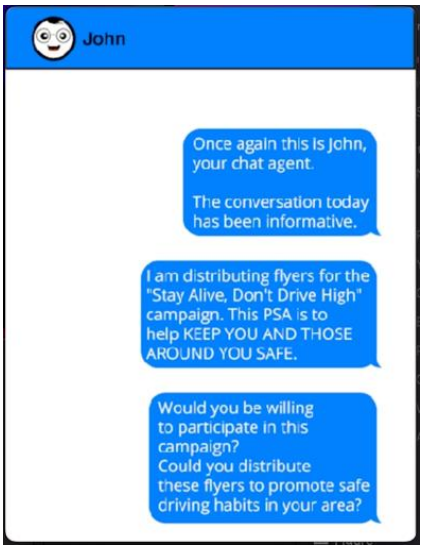


Figure 13. Video 3 Male

We chose an eight-bit style for the artwork in the posters in an attempt to appeal to a wide range of audiences. The first widely popular game, Pong, debuted in 1972 (Armas, 2022). Today the video game industry, a 90.13 USD industry in the U.S. alone (Clement, 2022). Thus, we determined an 8-bit styling would appeal to a wide range of individuals from Gen Z to Baby Boomers.

Figure 14. Regulatory Focus-safe poster

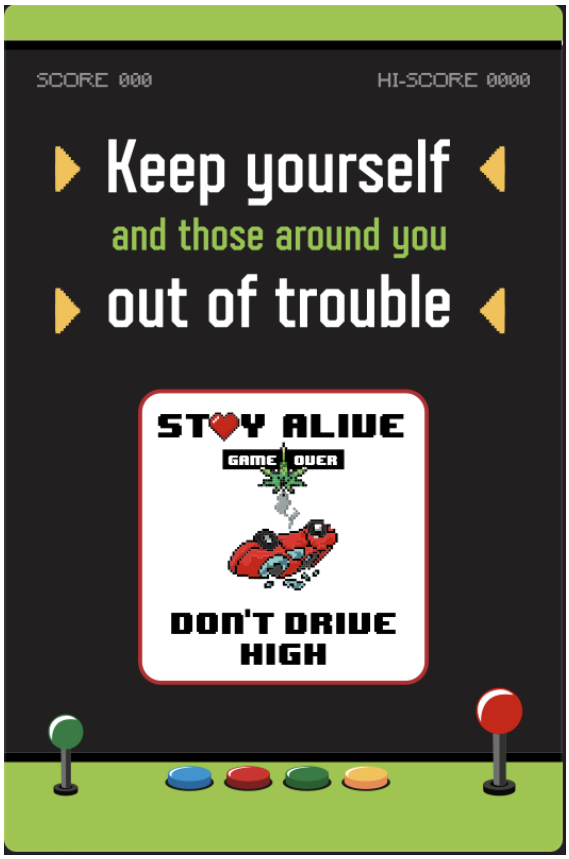


Figure 15. Regulatory Focus -trouble poster

Finally, we asked a series of questions about their demographics (age, gender, ethnicity/race, household income, and education level) and a few questions related to their knowledge of current marijuana laws in their area and their opinions of the substance and consumption habits. They were then debriefed and thanked as the survey ended.

CHAPTER 4

RESULTS

This paper predicted that hypocrisy induction, chatbot gender, and linguistic styles will impact participants' willingness to support the campaign (WTP). To test this prediction, an analysis of variance (ANOVA) was performed. After controlling for participants' attitude toward the marijuana ($p < .001$), the analysis revealed a significant three-way interaction ($F(1, 693) = 6.99$, $p = .008$). Findings further showed that hypocrisy induction is effective when chatbot gender and linguistic styles are properly paired. Specifically, participants in the hypocrisy induction condition ($M = 4.09$) exhibited higher WTP than those in the non-hypocrisy induction condition ($M = 3.07$; $F(1, 693) = 10.25$, $p = .001$) when the chatbot they interacted with was female in gender and used casual language; the hypocrisy induction was ineffective when the female chatbot used formal languages ($M_{hypo} = 3.88$ vs. $M_{non\text{-}hypo} = 3.44$; $F(1, 693) = 2.03$, $p > .1$) (See figure16 on page 35). Similarly, hypocrisy induction ($M = 4.36$) increased WTP than those who did not receive the hypocrisy induction manipulation ($M = 3.03$; $F(1, 693) = 17.98$, $p < .001$) when the gender of the chatbot they interacted with was male and used formal language; the hypocrisy induction was insignificant when the male chatbot used informal languages ($M_{hypo} = 3.59$ vs. $M_{non\text{-}hypo} = 3.34$; $F(1, 693) = .63$, $p > .1$). (See figure 17 on page 35).

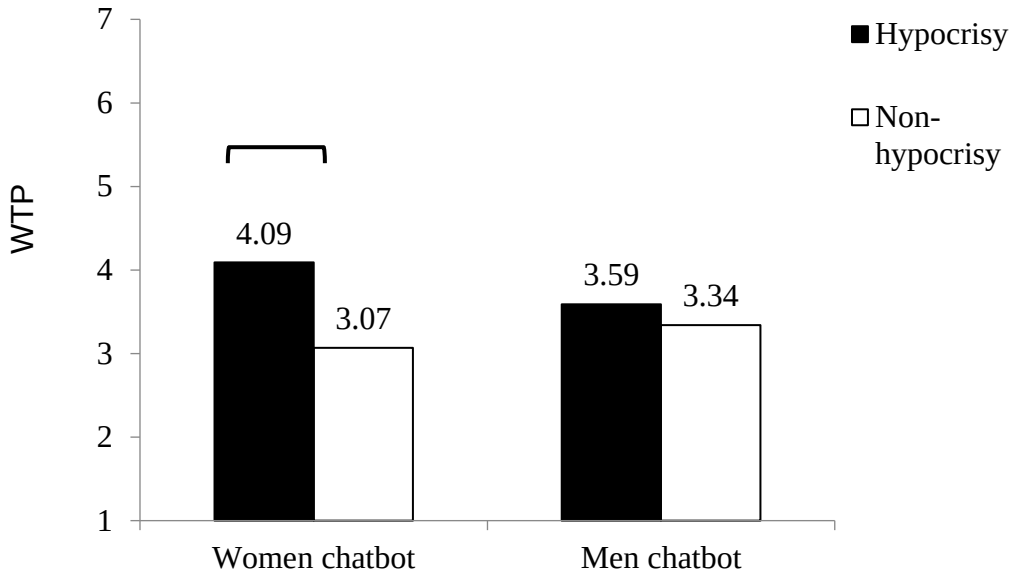
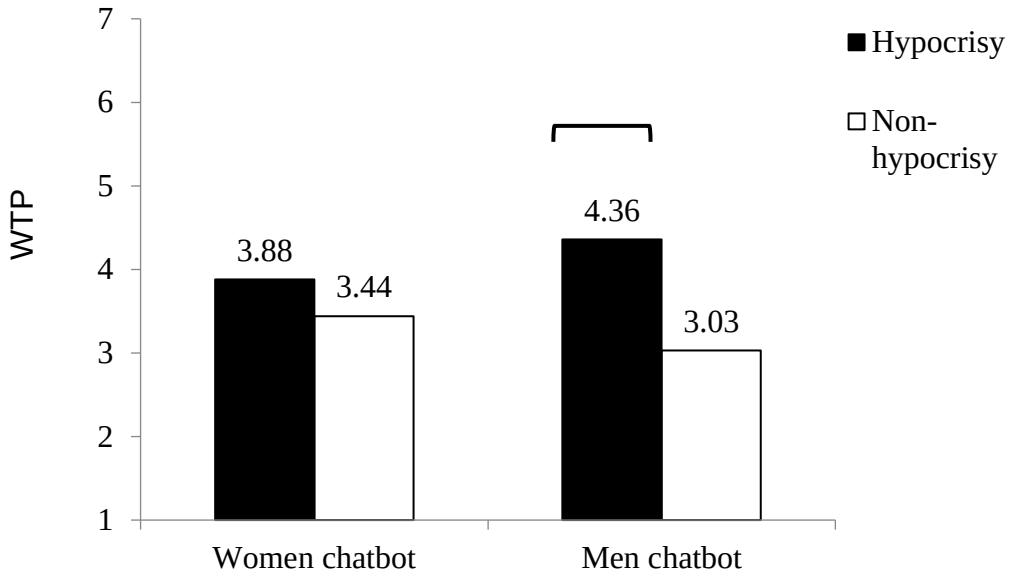


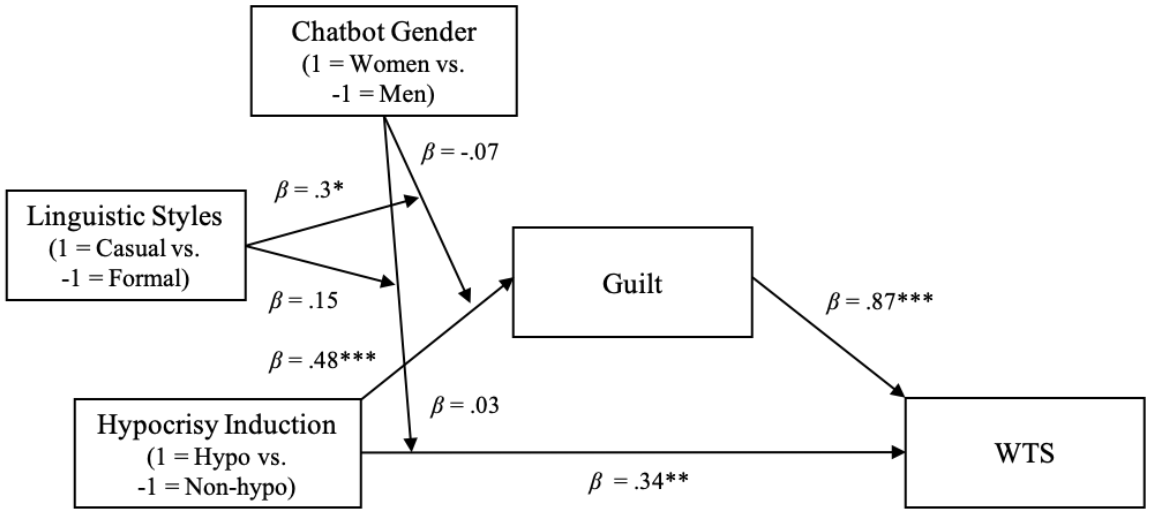
Figure 16 - Casual language



Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Figure 17 - Formal language

Figure 18. Three-way interaction between hypocrisy induction, chatbot gender, and linguistic styles on willingness to participate in the campaign (Study 1)



Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Figure 18. The moderated mediation analysis

It was predicted that the match between chatbot gender and linguistic styles influences feelings of guilt caused by hypocrisy induction and determines participants' willingness to support the campaign. PROCESS analysis (Hayes 2017, Model 12, 5000 bootstrap samples) showed that guilt explains the three-way interactions among hypocrisy induction, chatbot gender, and linguistic style, after controlling for their attitude toward marijuana. The index of moderated mediation was significant (index = .26, SE = .11, CI = .05 to .47). Specifically, the indirect effect of hypocrisy induction on WTP through guilt was significant when the women chatbot used casual languages (Effect = .79, SE = .21, CI = .37 to 1.2) instead of formal language (Effect = .17, SE = .23, CI = -.29 to .62). Conversely, the indirect effect of hypocrisy induction on WTP through guilt was significant when the male chatbot used formal languages (Effect = .56, SE = .22, CI = .13 to 1) instead of casual language (Effect = .13, SE = .21, CI = -.28 to .54). That is,

hypocrisy induction enhanced the feeling of guilt when the gender of chatbot is properly matched with linguistic styles (female chatbot + informal language; male chatbot + formal language), thereby increasing WTP. See Figure 18 on page 36

CHAPTER 5

DISCUSSION

A. THEORETICAL IMPLICATIONS

Hypocrisy induction is proven to be an effective tool for perceived persuasion, adding to the ever-growing wealth of research by showing that the process is successful in marijuana studies. Our results did not show a move towards social non-conformity regarding perceived gender in chat agents. Nor did it support UNESCO'S proposal to develop a neutral 'machine gender' for voice assistants and service-related chat agents that is neither male nor female by creating a gender-neutral anthropomorphized chatbot (UNESCO, 2019). However, it showed that male and female genders are equally effective when gender is paired with specific language styles. Our study shows that when paired correctly, male and female-gendered chat agents are equally helpful at performing tasks requiring more perceived emotional and conventional intelligence. In the case of this study, it required the ability to educate users about marijuana laws and discourage unsafe practices while at the same time persuading individuals to maintain or change to more prosocial behavior. By capitalizing on these perceived traits, we could build on existing societal perceptions to create chat agents for both genders to show the same confidence, authority, and empathy without causing users discomfort or distrust.

B. PRACTICAL IMPLICATIONS

It was discovered that when gender and language styles are paired correctly, the chat agent's persuasiveness effectiveness can increase when using hypocrisy induction to cause dissonance. Data from this study will be helpful to government and non-profit entities as they attempt to educate and encourage safe behavior as marijuana becomes less stigmatized. These results could also impact policymaking regarding marijuana legalization and the types of studies

related to marijuana and cannabis. Practitioners working towards public health and public safety advertising campaigns can use this data to develop new ways to encourage safe practices in the use of marijuana, including using new media and creative forms of advertising to persuade individuals to practice safe habits. This study's success indicates that developing a chatbot for education and persuading individuals against illegal and unsafe behavior would provide a good return on investment by offering preferred chat agents to specifically targeted audiences for a broader reach and positive effect. Furthermore, it is encouraged to push towards allocating funds towards new media and artificial intelligence advertising in government-funded public safety announcements and campaigns to create a more well-rounded and integrated approach.

Using an integrated marketing approach that includes various technically stylized AI-driven chatbots and other forms of traditional media, event, and print marketing to create a higher potential for more positive outcomes in public health and safety advertising. Adding multiple gender options also helps reduce human bias's impact during the design process of any marketing campaign, making practitioners more aware of their audiences and what they respond best. Our use of different language styles helped to determine that using written language similarly to how your audience is vital in producing trust and confidence in a chat agent, this aids in persuading individuals in many forms, especially new media. In other words, it is crucial to speak to an audience in a way they can best understand. Advertising practitioners will use studies like this to refine processes and explore new ways of marketing public safety through different gender perspectives in new media formats. By testing the effectiveness of different genders, practitioners can develop the best solutions for specific tasks in demographical, cultural, and geographical groups within the numerous societies in the United States and globally.

C. LIMITATIONS AND FUTURE OF RESEARCH

Results showed that a female-gendered chat agent using casual written language effectively persuaded individuals to participate in an anti-drugged driving campaign. Conversely, a male-gendered chat agent using formal language proved just as effective. These results could differ between cultures and countries. Differing cultural and societal norms regarding gender could significantly impact the persuasiveness and trust of a chat agent. Additionally, Other countries and cultures could have varied results regarding hypocrisy induction as an effective means of inducing behavioral change. The results showed a heavy response rate for a specific demographic. Future studies are completed away from the online platform to gather results from more varied populations ranging from age, education level, ethnicity, and race.

Language style variables in this experiment could have been more divided between formal and casual stylings. The human bias of the researchers could have played a role in how "formal" or "casual" language style was perceived. More research with additional checks that indicate a clear difference between the styles of language used would be essential to help eliminate human bias. As stated in the research method, newer syntax, abbreviations, acronyms, and emojis were not used to maintain what was perceived as a professional customer service demeanor by the chat agents. Experiments pushing the envelope of newer text-based written text stylings could have more varied or definitive results and help to indicate if gender and gender stereotypes can play an active role in persuasion through hypocrisy induction. Similar studies are conducted in other languages. Results could vary between languages, even in the country where the study was conducted.

This study was conducted in the United States at a time when laws regarding marijuana usage were part of many political platforms. Federal law still indicates possession and use of

marijuana as an illegal act. Nevertheless, more states continue to legalize marijuana for medical and recreational use, and even so, marijuana laws contradict and vary from state to state. As a result, public opinion based on political and religious views, which we did not measure, may have had a more significant, untested implication on our results. We suggest more targeted studies from region to region in the U.S. as political and socioeconomic climates adjust over time. Results from later studies could possess better quality data that is less muddied by political views on marijuana.

The chatbot conversation featured a scenario featuring a one-sided conversation. Due to the limitations of the researchers, we did not feature actual human-to-computer interaction (HCI). However, we only implied that individuals would need to imagine this was a real-life scenario. More research, including HCI with more realistic scenarios within the experiment, should be conducted to create algorithms and chatbot software in a more realistic setting to indicate further if this new media and communication would benefit public safety and health campaigns. This step would require more cost and time attribution, which is why this study is relevant in justifying more technically powerful stimuli.

This research did not include voice or speaking components and only utilized written text. Future research could explore language styles through speech communication. This aspect of speech communication could provide insightful data into developing more accessible, inclusive HCI opportunities in public safety campaigns for those that rely on readers and talk-to-text programs and features.

Regulatory focus was attempted to be used as a moderator of hypocrisy induction within this study, shown in the conversation with the chatbot and imagery provided as a simulated download of visual stimuli. However, the results of this study showed no significant results as it

was difficult to show as a four-way comparison. Additionally, the sample size was too small (only 52 males and females between 21-25) to determine if it would be effective for those vulnerable ages. New experiment designs and methods focus on how the regulatory focus in messaging can affect the persuasiveness of gender in AI as well as the style of language used. Results could lead to more informed and confident public safety campaign copy creators developing AI archetypes, voices, and personas that come standard with the ability to speak to specific targeted audiences. This information helps to develop positive socioeconomic change and bridge the gap to inclusive and equitable public safety advertising. Accurately depicting and reaching specific groups, specifically in age groups and regions that are high-risk or lacking information, will help to ensure safe behavior amongst targeted areas and vulnerable audiences. Studies such as these could help develop more positive results in public safety campaigns with better returns on investment.

CHAPTER 6

CONCLUSION

These results apply to many growing fields of research and theories on AI and gender and dissonance theories. Female AI chat agents use casual linguistic styles more effectively. In contrast, male chat agents appear just as effective using a formal language style. With this knowledge, the researcher hopes to develop new ways to capitalize on these findings by using them to develop campaigns that are more effectively targeted toward the individuals they would positively impact psychologically, helping viewers maintain safe prosocial behavior. It's possible that the results of this study can help lead to an understanding of when gender is appropriate to use in AI and when it can be abandoned to remove subservient and over-authoritative stigmas applied to women and men. This study will help to further prove the effectiveness of hypocrisy induction as a persuasive tool, as it is believed to be among the first to test its effectiveness in marijuana studies. The researcher hope to have provided an excellent gateway to combining several areas to test how each variable can affect the other. More studies should be conducted on marijuana, especially in influencing positive and safe behaviors around the substance and not just its usefulness in medicine and manufacturing as it broadens the knowledge of how AI and other new media advertising can aid public safety and public health campaigns to promote positive behaviors.

REFERENCES

Agassi, J., & Wiezenbaum, J. (1976). Computer Power and human reason: From judgment to calculation. *Technology and Culture*, *17*(4), 813. https://doi.org/10.2307/3103715

Anderson, C. A., Lindsay, J. J., & Bushman, B. J. (1999). Research in the psychological laboratory. *Current Directions in Psychological Science*, *8*(1), 3–9. https://doi.org/10.1111/1467-8721.00002

Armas, G. C. (2022, April 25). *A look back at the popularity of pong and rise of video games*. UWM REPORT. Retrieved July 8, 2022, from https://uwm.edu/news/a-look-back-at-the-popularity-of-pong-and-rise-of-video-games/

Aronson, E. (1992). The return of the repressed: Dissonance theory makes a comeback. *Psychological Inquiry*, *3*(4), 303–311. https://doi.org/10.1207/s15327965pli0304_1

Aronson, E. (1999). The power of self-persuasion. *American Psychologist*, *54*(11), 875–884. https://doi.org/10.1037/h0088188

Aronson, E., & O'Leary, M. (1982). The relative effectiveness of models and prompts on Energy Conservation: A field experiment in a shower room. *Journal of Environmental Systems*, *12*(3), 219–224. https://doi.org/10.2190/ubd5-4y9b-61ef-wum6

Aronson, E., Fried, C., & Stone, J. (1991). Overcoming denial and increasing the intention to use condoms through the induction of hypocrisy. *American Journal of Public Health*, *81*(12), 1636–1638. https://doi.org/10.2105/ajph.81.12.1636

Baek, T. H., & Yoon, S. (2017). Guilt and shame: Environmental message framing effects. *Journal of Advertising*, *46*(3), 440–453. https://doi.org/10.1080/00913367.2017.1321069

Baek, T. H., Yoon, S., & Kim, S. (2015). When environmental messages should be assertive: Examining the moderating role of effort investment. *International Journal of Advertising*, *34*(1), 135–157. https://doi.org/10.1080/02650487.2014.993513

Baylor, A. L., & Kim, Y. (2004). Pedagogical agent design: The impact of agent realism, gender, ethnicity, and instructional role. *Intelligent Tutoring Systems*, 592–603. https://doi.org/10.1007/978-3-540-30139-4_56

Bigman, Y. E., & Gray, K. (2018). People are averse to machines making moral decisions. *Cognition*, *181*, 21–34. https://doi.org/10.1016/j.cognition.2018.08.003

Bogdanovych, A., Trescak, T., & Simoff, S. (2015). Formalising believability and building believable virtual agents. *Lecture Notes in Computer Science*, 142–156. https://doi.org/10.1007/978-3-319-14803-8_11

Borau, S., & Bonnefon, J.-F. (2020). Gendered products act as the extended phenotype of human sexual dimorphism: They increase physical attractiveness and desirability. *Journal of Business Research*, *120*, 498–508. https://doi.org/10.1016/j.jbusres.2019.03.007

Borau, S., Otterbring, T., Laporte, S., & Fosso Wamba, S. (2021). The most human bot: Female gendering increases humanness perceptions of bots and acceptance of ai. *Psychology & Marketing*, *38*(7), 1052–1068. https://doi.org/10.1002/mar.21480

Boulder proves fear-based advertising and rats don't stop you from smoking weed. Rooster Magazine. (2014, September 2). Retrieved July 1, 2022, from https://therooster.com/blog/boulder-proves-fear-based-advertising-and-rats-dont-stop-you-smoking-weed.

Brahnam, S. (2014, April 22). *Building character for artificial conversational agents: Ethos, ethics, believability, and credibility*. PsychNology Journal. Retrieved August 8, 2022, from https://www.academia.edu/331369/Building_Character_for_Artificial_Conversational_Agents_Ethos_Ethics_Believability_and_Credibility

Breitenbach, S. (2021, April 21). *Legal marijuana means states struggle to address high driving*. Governing: Future of States and Localities. Retrieved July 5, 2022, from https://www.governing.com/archive/as-legal-marijuana-expands-states-struggle-with-drugged-driving.html

Bui, V. (2021). Gender language in modern advertising: An investigation. *Current Research in Behavioral Sciences*, *2*, 100008. https://doi.org/10.1016/j.crbeha.2020.100008

Burgess, D., & Borgida, E. (1999). Who women are, who women should be: Descriptive and prescriptive gender stereotyping in sex discrimination. *Psychology, Public Policy, and Law*, *5*(3), 665–692. https://doi.org/10.1037/1076-8971.5.3.665

Callister, M., Stern, L. A., John, K. K., & Seipel, M. (2021). Digital Body Disturbances in advertising: Attraction or repulsion? *Journal of Current Issues & Research in Advertising*, *43*(1), 1–25. https://doi.org/10.1080/10641734.2021.1925180

Carli, L. L. (1990). Gender, language, and influence. *Journal of Personality and Social Psychology*, *59*(5), 941–951. https://doi.org/10.1037/0022-3514.59.5.941

Chatbot. chatbot noun - Definition, pictures, pronunciation and usage notes | Oxford Advanced Learner's Dictionary at OxfordLearnersDictionaries.com. (n.d.). Retrieved August 5, 2022, from https://www.oxfordlearnersdictionaries.com/us/definition/english/chatbot?q=chatbot.

Chaves, A. P., & Gerosa, M. A. (2018). Single or multiple conversational agents? *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/3173574.3173765

Chaves, A. P., & Gerosa, M. A. (2020). How should my chatbot interact? A survey on social characteristics in human–chatbot interaction design. *International Journal of Human–Computer Interaction*, *37*(8), 729–758. https://doi.org/10.1080/10447318.2020.1841438

Cheng, Y.-H., Yen, H. J. R., Chuang, S.-C., & Chang, C.-J. (2013). Product option framing under the influence of a promotion versus prevention focus. *Journal of Economic Psychology*, *39*, 402–413. https://doi.org/10.1016/j.joep.2013.06.003

Cialdini, R. B. (2007). *Influence: The psychology of persuasion*. Collins.

Clement, J. (2022, October 21). *Video games industry in the U.S. 2022*. Statista. Retrieved October 26, 2022, from https://www.statista.com/statistics/246892/value-of-the-video-game-market-in-the-us/#:~:text=As%20well%20as%20being%20one,new%20all%2Dtime%20industry%20record.

Dawson, L. L. (1999). When prophecy fails and faith persists: A theoretical overview. *Nova Religio*, *3*(1), 60–82. https://doi.org/10.1525/nr.1999.3.1.60

De Angeli, A., Brahnam, S., Wallis, P., & Dix, A. (2006). Misuse and abuse of Interactive Technologies. *CHI '06 Extended Abstracts on Human Factors in Computing Systems*. https://doi.org/10.1145/1125451.1125753

De Angeli, A., Johnson, G., & Coventry, L. (2001). The Unfriendly User: Exploring Social Reactions to Chatterbot; Proceedings of The International Conference on Affective Human Factors Design, London. *The Unfriendly User: Exploring Social Reactions to Chatterbots*.

Devine, P. G., Tauer, J. M., Barron, K. E., Elliot, A. J., & Vance, K. M. (n.d.). Moving beyond attitude change in the study of dissonance-related processes. *Cognitive Dissonance: Progress on a Pivotal Theory in Social Psychology.*, 297–323. https://doi.org/10.1037/10318-012

Dickerson, C. A., Thibodeau, R., Aronson, E., & Miller, D. (1992). Using cognitive dissonance to encourage water conservation1. *Journal of Applied Social Psychology*, *22*(11), 841–854. https://doi.org/10.1111/j.1559-1816.1992.tb00928.x

Dietvorst, B. J., Simmons, J. P., & Massey, C. (2015). Algorithm aversion: People erroneously avoid algorithms after seeing them err. *Journal of Experimental Psychology: General*, *144*(1), 114–126. https://doi.org/10.1037/xge0000033

Dindia, K., & Allen, M. (1992). Sex differences in self-disclosure: A meta-analysis. *Psychological Bulletin*, *112*(1), 106–124. https://doi.org/10.1037/0033-2909.112.1.106

Doherty, E. G., & Eagly, A. H. (1989). Sex differences in social behavior: A social-role interpretation. *Contemporary Sociology*, *18*(3), 343. https://doi.org/10.2307/2073813

Dovidio, J. F., Hewstone, M., Glick, P., & Esses, V. M. (2010). Prejudice, stereotyping and discrimination: Theoretical and empirical overview. *The SAGE Handbook of Prejudice, Stereotyping and Discrimination*, 3–28. https://doi.org/10.4135/9781446200919.n1

Eagly, A. H., & Steffen, V. J. (1984). Gender stereotypes stem from the distribution of women and men into social roles. *Journal of Personality and Social Psychology*, *46*(4), 735–754. https://doi.org/10.1037/0022-3514.46.4.735

Engle, T. (2020, April 19). *Justice in the Cannabis Industry*. Eaze. Retrieved July 2, 2022, from https://www.eaze.com/article/justice-in-the-cannabis-industry.

Epley, N. (2018). A mind like mine: The exceptionally ordinary underpinnings of anthropomorphism. *Journal of the Association for Consumer Research*, *3*(4), 591–598. https://doi.org/10.1086/699516

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review*, *114*(4), 864–886. https://doi.org/10.1037/0033-295x.114.4.864

Erceg-Hurn, D. M., & Steed, L. G. (2011). Does exposure to cigarette health warnings elicit psychological reactance in smokers? *Journal of Applied Social Psychology*, *41*(1), 219–237. https://doi.org/10.1111/j.1559-1816.2010.00710.x

Eyssel, F., & Hegel, F. (2012). (s)he's got the look: Gender stereotyping of robots. *Journal of Applied Social Psychology*, *42*(9), 2213–2230. https://doi.org/10.1111/j.1559-1816.2012.00937.x

Ezekiel, E. (2020, April 20). *A tale of two countries: Racially targeted arrests in the era of marijuana reform*. American Civil Liberties Union. Retrieved July 1, 2022, from https://www.aclu.org/report/tale-two-countries-racially-targeted-arrests-era-marijuana-reform

Fertig, N. (2022, July 21). *Schumer launches long-shot bid for legal weed*. POLITICO. Retrieved August 7, 2022, from https://www.politico.com/news/2021/07/14/schumer-launches-long-shot-bid-for-legal-weed-499584

Festinger, L. (1957). One an introduction to the theory of Dissonance. *A Theory of Cognitive Dissonance*, 1–31. https://doi.org/10.1515/9781503620766-002

Festinger, L. (1962). Cognitive dissonance. *Scientific American*, *207*(4), 93–106. https://doi.org/10.1038/scientificamerican1062-93

Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *The Journal of Abnormal and Social Psychology*, *58*(2), 203–210. https://doi.org/10.1037/h0041593

FindLaw. (2021, November 29). *Federal marijuana laws*. Findlaw. Retrieved August 8, 2022, from https://www.findlaw.com/criminal/criminal-charges/federal-marijuana-laws.html

Fiske, S. T., Cuddy, A. J. C., & Glick, P. (2007). Universal dimensions of social cognition: Warmth and competence. *Trends in Cognitive Sciences*, *11*(2), 77–83. https://doi.org/10.1016/j.tics.2006.11.005

Florack, A., & Hartmann, J. (2007). Regulatory focus and investment decisions in small groups. *Journal of Experimental Social Psychology*, *43*(4), 626–632. https://doi.org/10.1016/j.jesp.2006.05.005

Fointiat, V. (2004). "I know what I have to do, but…" when hypocrisy leads to behavioral change. *Social Behavior and Personality: an International Journal*, *32*(8), 741–746. https://doi.org/10.2224/sbp.2004.32.8.741

Fointiat, V. (2011). Saying, but not doing: Induced hypocrisy, trivialization, and misattribution. *Social Behavior and Personality: an International Journal*, *39*(4), 465–475. https://doi.org/10.2224/sbp.2011.39.4.465

Fointiat, V., Morisot, V., & Pakuszewski, M. (2008). Effects of past transgressions in an induced hypocrisy paradigm. *Psychological Reports*, *103*(2), 625–633. https://doi.org/10.2466/pr0.103.2.625-633

Gass, R. H., & Seiter, J. S. (2018). Compliance gaining. *Persuasion*, 235–259. https://doi.org/10.4324/9781315209302-10

Gawronski, B., & Strack, F. (2004). On the propositional nature of cognitive consistency: Dissonance changes explicit, but not implicit attitudes. *Journal of Experimental Social Psychology*, *40*(4), 535–542. https://doi.org/10.1016/j.jesp.2003.10.005

Ghazali, A. S., Ham, J., Barakova, E. I., & Markopoulos, P. (2018). Effects of robot facial characteristics and gender in persuasive human-robot interaction. *Frontiers in Robotics and AI*, *5*. https://doi.org/10.3389/frobt.2018.00073

Gonzales, M. H., Aronson, E., & Costanzo, M. A. (1988). Using social cognition and persuasion to promote energy conservation: A Quasi-Experiment1. *Journal of Applied Social Psychology*, *18*(12), 1049–1066. https://doi.org/10.1111/j.1559-1816.1988.tb01192.x

Guadagn, R. E., Blascovich, j, Bailenson, J. N., & McCall, C. (2007). Virtual humans and persuasion: The effects of agency and behavioral realism. *Media Psychology*, *10*, 1–22. https://doi.org/DOI:10.1080/15213260701300865

Gustavsson, E. (2005). Virtual servants: Stereotyping female front-office employees on the internet. *Gender, Work and Organization*, *12*(5), 400–419. https://doi.org/10.1111/j.1468-0432.2005.00281.x

Harmon-Jones, E., Brehm, J. W., Greenberg, J., Simon, L., & Nelson, D. E. (1996). Evidence that the production of aversive consequences is not necessary to create cognitive dissonance. *Journal of Personality and Social Psychology*, *70*(1), 5–16. https://doi.org/10.1037/0022-3514.70.1.5

Hartman, R. L., & Huestis, M. A. (2013). Cannabis effects on driving skills. *Clinical Chemistry*, *59*(3), 478–492. https://doi.org/10.1373/clinchem.2012.194381

He, F., Guan, H., Kong, Y., Cao, R., & Peng, J. (2013). Some individual differences influencing the propensity to happiness: Insights from behavioral economics. *Social Indicators Research*, *119*(2), 897–908. https://doi.org/10.1007/s11205-013-0519-0

Hidalgo, C. A., Orghiain, D., Canals, J. A., de Almeida, F., & Martin, N. (2021). How humans judge machines. https://doi.org/10.7551/mitpress/13373.001.0001

Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. *Advances in Experimental Social Psychology*, 1–46. https://doi.org/10.1016/s0065-2601(08)60381-0

Higgins, E. T., Friedman, R. S., Harlow, R. E., Idson, L. C., Ayduk, O. N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: Promotion Pride Versus Prevention Pride. *European Journal of Social Psychology*, *31*(1), 3–23. https://doi.org/10.1002/ejsp.27

Hinsz, V. B., & Tomhave, J. A. (1991). Smile and (half) the world smiles with you, frown and you frown alone. *Personality and Social Psychology Bulletin*, *17*(5), 586–592. https://doi.org/10.1177/0146167291175014

Illinois Department of Human Services and Prevention First. (2019). *Illinois Department of Human Services*. IDHS. Retrieved June 8, 2022, from https://www.dhs.state.il.us/

Illinois General Assembly. (n.d.). *PUBLIC HEALTH (410 ILCS 705/) Cannabis regulation and tax act*. 410 ILCS 705/ cannabis regulation and tax act. Retrieved August 8, 2022, from https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992&ChapterID=35.

Ischen, C., Araujo, T., van Noort, G., Voorveld, H., & Smit, E. (2020). "I am here to assist you today": The role of entity, interactivity and experiential perceptions in chatbot persuasion. *Journal of Broadcasting & Electronic Media, 64*(4), 615–639. https://doi.org/10.1080/08838151.2020.1834297

Jain, M., Kota, R., Kumar, P., & Patel, S. N. (2018). Convey. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/3173574.3174042

Jain, M., Kumar, P., Kota, R., & Patel, S. N. (2018). Evaluating and informing the design of Chatbots. *Proceedings of the 2018 Designing Interactive Systems Conference*. https://doi.org/10.1145/3196709.3196735

Jenkins, M.-C., Churchill, R., Cox, S., & Smith, D. (2007). Analysis of user interaction with service oriented Chatbot Systems. *Human-Computer Interaction. HCI Intelligent Multimodal Interaction Environments*, 76–83. https://doi.org/10.1007/978-3-540-73110-8_9

Johnson, P. D., Smith, M. B., Wallace, J. C., Hill, A. D., & Baron, R. A. (2015). A review of multilevel regulatory focus in organizations. *Journal of Management*, *41*(5), 1501–1529. https://doi.org/10.1177/0149206315575552

Kalcik, S. (1975). "... like Ann's gynecologist or the time I was almost raped": Personal narratives in women's rap groups. *The Journal of American Folklore*, *88*(347), 3. https://doi.org/10.2307/539181

Kim, W. J., & Ryoo, Y. (2022). Hypocrisy induction: Using Chatbots to promote COVID-19 social distancing. *Cyberpsychology, Behavior, and Social Networking*, *25*(1), 27–36. https://doi.org/10.1089/cyber.2021.0057

Kim, W. J., Ryoo, Y., Drumwright, M., & Yoon, S. (2022). Hypocrisy induction in advertising. *Journal of Advertising*, 1–20. https://doi.org/10.1080/00913367.2022.2043793

Kim, W. J., Ryoo, Y., Yoon, S., & Kim, K. (2021). Ethical dissonance in environmental advertising: Moderating effects of self-benefit versus other-benefit appeals. *International Journal of Advertising*, *40*(8), 1320–1342. https://doi.org/10.1080/02650487.2021.1988218

Kim, Y., Baek, T. H., Yoon, S., Oh, S., & Choi, Y. K. (2017). Assertive environmental advertising and reactance: Differences between South Koreans and Americans. *Journal of Advertising*, *46*(4), 550–564. https://doi.org/10.1080/00913367.2017.1361878

Kirakowski, J., O'Donnell, P., & Yiu, A. (2009). Establishing the hallmarks of a convincing chatbot-human dialogue. *Human-Computer Interaction*. https://doi.org/10.5772/7741

Kok, G., Peters, G.-J. Y., Kessels, L. T., ten Hoor, G. A., & Ruiter, R. A. (2017). Ignoring theory and misinterpreting evidence: The false belief in fear appeals. *Health Psychology Review*, *12*(2), 111–125. https://doi.org/10.1080/17437199.2017.1415767

Lakoff, R. T., & Bucholtz, M. (2004). *Language and woman's place text and commentaries*. Oxford University Press.

Lee, L. (2020, May 8). *What is conversational marketing? and Why Brands Need It Now*. IBM. Retrieved October 22, 2022, from https://www.ibm.com/watson-advertising/thought-leadership/what-is-conversational-marketing

Liu, H.-H. (2010). Impact of regulatory focus on ambiguity aversion. *Journal of Behavioral Decision Making*, *24*(4), 412–430. https://doi.org/10.1002/bdm.702

Liu, S., Helfenstein, S., & Wahlstedt, A. (2008). Social Psychology of persuasion applied to human–agent interaction. *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments*, *4*(2), 123–143. https://doi.org/10.17011/ht/urn.200810245833

Liu, Z., & Brockner, J. (2015). The interactive effect of positive inequity and regulatory focus on work performance. *Journal of Experimental Social Psychology*, *57*, 111–116. https://doi.org/10.1016/j.jesp.2014.11.009

Macrae, C. N., Stangor, C., & Hewstone, M. (1996). *Stereotypes and stereotyping*. The Guilford Press.

Mairesse, F., & Walker, M.A. (2008). Can Conversational Agents Express Big Five Personality Traits through Language? : Evaluating a Psychologically-Informed Language Generator.

Manczak, E. M., Zapata-Gietl, C., & McAdams, D. P. (2014). Regulatory focus in the life story: Prevention and promotion as expressed in three layers of personality. *Journal of Personality and Social Psychology*, *106*(1), 169–181. https://doi.org/10.1037/a0034951

Metzger, A. (2016, October 26). *Opponents of legalized marijuana take aim at stoned driving*. The Berkshire Eagle. Retrieved June 5, 2022, from https://www.berkshireeagle.com/news/local/opponents-of-legalized-marijuana-take-aim-at-stoned-driving/article_62e92d57-acda-538c-a0a7-b1849fcc6dec.html

Molden, D. C., Lucas, G. M., Finkel, E. J., Kumashiro, M., & Rusbult, C. (2009). Perceived support for promotion-focused and prevention-focused goals. *Psychological Science*, *20*(7), 787–793. https://doi.org/10.1111/j.1467-9280.2009.02362.x

Moreno, R., & Mayer, R. E. (2002). Learning science in virtual reality multimedia environments: Role of methods and media. *Journal of Educational Psychology*, *94*(3), 598–610. https://doi.org/10.1037/0022-0663.94.3.598

Morris, T. W. (2002). Conversational Agents for Game-Like Virtual Environments. *Artificial Intelligence and Interactive Entertainment Technical Report*, *02*(1), 82–86.

Morrissey, K., & Kirakowski, J. (2013). 'realness' in chatbots: Establishing quantifiable criteria. *Human-Computer Interaction. Interaction Modalities and Techniques*, 87–96. https://doi.org/10.1007/978-3-642-39330-3_10

Montrey, J. (2005)"An Investigation Of The Effects Of Speakers' Vocal Characteristics On Ratings Of Confidence And Persuasion" *Electronic Theses and Dissertations*. 595. https://stars.library.ucf.edu/etd/595

Mulac, A., Lundell, T. L., & Bradac, J. J. (1986). Male/female language differences and attributional consequences in a public speaking situation: Toward an explanation of the gender-linked language effect. *Communication Monographs*, *53*(2), 115–129. https://doi.org/10.1080/03637758609376131

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*, *126*(2), 247–259. https://doi.org/10.1037/0033-2909.126.2.247

Nass, C., Moon, Y., & Green, N. (1997). Are machines gender neutral? gender-stereotypic responses to computers with voices. *Journal of Applied Social Psychology*, *27*(10), 864–876. https://doi.org/10.1111/j.1559-1816.1997.tb00275.x

Nguyen, H., Masthoff, J., & Edwards, P. (2007). Persuasive effects of embodied conversational agent teams. *Human-Computer Interaction. HCI Intelligent Multimodal Interaction Environments*, 176–185. https://doi.org/10.1007/978-3-540-73110-8_19

"Oh Talking Voice That is So Sweet": Constructing dialogue in conversation. (2007). *Talking Voices*, 102–132. https://doi.org/10.1017/cbo9780511618987.005

Otterbacher, J., & Talias, M. (2017). S/he's too warm/agentic! *Proceedings of the 2017 ACM/IEEE International Conference on Human-Robot Interaction*. https://doi.org/10.1145/2909824.3020220

Pallack, M. S., D. A. Cook, and J. J. Sullivan. 1980. "Chap. Commitment and Energy Conservation." In Applied Social Psychology Annual, edited by Leonard Bickman, 235–53. Washington, D.C.: Society for the Psychological Study of Social Issues.

Pelt, A., Barbier, L., & Fointiat, V. (2018). Expressive dissonance: When emotional inconsistency arouses dissonance. *International Review of Social Psychology*, *31*(1). https://doi.org/10.5334/irsp.118

Peng, J., Cao, F., Zhang, Y., Cao, Y., Zhang, Y., Zhu, X., & Miao, D. (2019). Reflections on motivation: How regulatory focus influences self-framing and risky decision making. *Current Psychology*, *40*(6), 2927–2937. https://doi.org/10.1007/s12144-019-00217-w

Pinna, M. (2019). Do gender identities of femininity and masculinity affect the intention to buy ethical products? *Psychology & Marketing*, *37*(3), 384–397. https://doi.org/10.1002/mar.21298

Ramayah , T., Ahmad, N. H., Chin, L. G., & L, M. C. (2009). Testing a Causal Model of Internet Piracy Behavior Among University Students. *European Journal of Scientific Research* , *29*(2), 206–214.

Ridgeway, C. L., & Bourg, C. (2004). Gender as Status: An Expectation States Theory Approach. In A. H. Eagly, A. E. Beall, & R. J. Sternberg (Eds.), *The psychology of gender* (pp. 217–241). The Guilford Press.

Roter, D. L., Hall, J. A., & Aoki, Y. (2002). Physician gender effects in medical communication. *JAMA*, *288*(6), 756. https://doi.org/10.1001/jama.288.6.756

Shah, J., & Higgins, E. T. (2001). Regulatory concerns and appraisal efficiency: The general impact of promotion and prevention. *Journal of Personality and Social Psychology*, *80*(5), 693–705. https://doi.org/10.1037/0022-3514.80.5.693

Siegel, M., Breazeal, C., & Norton, M. I. (2009). Persuasive robotics: The influence of robot gender on human behavior. *2009 IEEE/RSJ International Conference on Intelligent Robots and Systems*. https://doi.org/10.1109/iros.2009.5354116

Solustro, S. (2020, February 24). *Pritzker Administration Announces Revenue Figures For First Month Of Adult Use Cannabis*. Illinois.gov. Retrieved August 9, 2022, from https://www2.illinois.gov/IISNews/21172-Pritzker_Administration_Announces_Revenue_Figures_For_First_Month_Of_Adult_Use_Cannabis.pdf

Spence, J. T., & Helmriech, R. L. (1978). Masculinity and femininity: Their psychological dimensions, correlates and antecedents. *Psychological Medicine*, *11*(1), 208–208. https://doi.org/10.1017/s0033291700053782

State of Illinois. (2019, June 25). Gov. Pritzker Signs Most Equity-Centric Law in Nation to Legalize Adult-Use Cannabis. *Illinois.gov*. Retrieved June 4, 2022, from https://www.illinois.gov/news/press-release.20242.html. .

Steckler, N. A., & Rosenthal, R. (1985). Sex differences in nonverbal and verbal communication with bosses, peers, and subordinates. *Journal of Applied Psychology*, *70*(1), 157–163. https://doi.org/10.1037/0021-9010.70.1.157

Stone, J., Aronson, E., Crain, A. L., Winslow, M. P., & Fried, C. B. (1994). Inducing hypocrisy as a means of encouraging young adults to use condoms. *Personality and Social Psychology Bulletin*, *20*(1), 116–128. https://doi.org/10.1177/0146167294201012

Stroessner, S. J., & Benitez, J. (2018). The social perception of humanoid and non-humanoid robots: Effects of gendered and Machinelike features. *International Journal of Social Robotics*, *11*(2), 305–315. https://doi.org/10.1007/s12369-018-0502-7

Sundar, S. S. (2020). Rise of Machine Agency: A framework for studying the psychology of human–ai interaction (HAII). *Journal of Computer-Mediated Communication*, *25*(1), 74–88. https://doi.org/10.1093/jcmc/zmz026

Sundar, S. S., & Nass, C. (2000). Source orientation in human-computer interaction. *Communication Research*, *27*(6), 683–703. https://doi.org/10.1177/009365000027006001

Sundar, S. S., Bellur, S., Oh, J., Jia, H., & Kim, H.-S. (2014). Theoretical importance of contingency in human-computer interaction. *Communication Research*, *43*(5), 595–625. https://doi.org/10.1177/0093650214534962

Sundar, S. S., Kalyanaraman, S., & Brown, J. (2003). Explicating web site interactivity. *Communication Research*, *30*(1), 30–59. https://doi.org/10.1177/0093650202239025

Sweeney, M., Smith, L. C., Nakamura, L. M., Brock André, & Renear, A. H. (2013). *Not just a pretty (inter)face: A critical analysis of Microsoft's 'ms. Dewey'* (dissertation).

Takeuchi, Y., Takahashi, T., & Katagiri, Y. (2000). Life-like agent design based on social interaction. *PRICAI 2000 Topics in Artificial Intelligence*, 816–816. https://doi.org/10.1007/3-540-44533-1_105

Tanford, S., & Montgomery, R. (2014). The effects of social influence and cognitive dissonance on travel purchase decisions. *Journal of Travel Research*, *54*(5), 596–610. https://doi.org/10.1177/0047287514528287

Traeger, M. L., Strohkorb Sebo, S., Jung, M., Scassellati, B., & Christakis, N. A. (2020). Vulnerable robots positively shape human conversational dynamics in a human–robot team. *Proceedings of the National Academy of Sciences*, *117*(12), 6370–6375. https://doi.org/10.1073/pnas.1910402117

Trolier, T. K., & Hamilton, D. L. (1986). Variables influencing judgments of correlational relations. *Journal of Personality and Social Psychology*, *50*(5), 879–888. https://doi.org/10.1037/0022-3514.50.5.879

U.S. Department of Health and Human Services. (2022, March 26). *Drugged driving Drugfacts*. National Institutes of Health. Retrieved June 1, 2022, from https://nida.nih.gov/publications/drugfacts/drugged-driving

van den Hende, E. A., & Mugge, R. (2014). Investigating gender-schema congruity effects on consumers' evaluation of anthropomorphized products. *Psychology & Marketing*, *31*(4), 264–277. https://doi.org/10.1002/mar.20693

Van Steenburg, E. (2020). When best intentions fail: Why ads may fall short in combating islamophobia. *Journal of Current Issues & Research in Advertising*, *41*(2), 171–190. https://doi.org/10.1080/10641734.2020.1716895

Wang, A. (2006). Advertising engagement: A driver of message involvement on message effects. *Journal of Advertising Research*, *46*(4), 355–368. https://doi.org/10.2501/s0021849906060429

Weizenbaum, J. (2021). Eliza—a computer program for the study of natural language communication between man and Machine (1966). *Ideas That Created the Future*, 271–278. https://doi.org/10.7551/mitpress/12274.003.0029

Welle, B., & Heilman, M. E. (2007). Formal and informal relationships within organizations. *Managing Social and Ethical Issues in Organizations* , 135–252. https://doi.org/10.4324/9780080496337-8

West, C. (1984). When the doctor is a "lady": Power, status and gender in physician-patient encounters. *Symbolic Interaction*, *7*(1), 87–106. https://doi.org/10.1525/si.1984.7.1.87

Williams, J. E., & Best, D. L. (1990). *Measuring sex stereotypes: A multination study*. Sage.

Williams, J. E., Satterwhite, R. C., & Best, D. L. (1999). *Sex Roles*, *40*(7/8), 513–525. https://doi.org/10.1023/a:1018831928829

Williams, P., Nicholas, D., & Rowlands, I. (2010). The attitudes and behaviours of illegal downloaders. *Aslib Proceedings*, *62*(3), 283–301. https://doi.org/10.1108/00012531011046916

Wolberg, J. M. (2006). College students' responses to antismoking messages: Denial, Defiance, and other boomerang effects. *Journal of Consumer Affairs*, *40*(2), 294–323. https://doi.org/10.1111/j.1745-6606.2006.00059.x

Women's rights and gender section (WRGS). OHCHR. (n.d.). Retrieved June 5, 2022, from https://previous.ohchr.org/EN/Issues/Women/WRGS/Pages/WRGSIndex.aspx

Yoon, S., Lalwani, A. K., Vargas, P. T., Kim, K., & Taylor, C. R. (2020). Culture and health persuasion: Differences between Koreans and Americans. *Journal of Current Issues & Research in Advertising*, *42*(1), 83–101. https://doi.org/10.1080/10641734.2019.1706211

Zamora, J. (2017). I'm sorry, Dave, I'm afraid I can't do that. *Proceedings of the 5th International Conference on Human Agent Interaction*. https://doi.org/10.1145/3125739.312576

VITA

Graduate School
Southern Illinois University Carbondale

Victoria Halfacre

Victoria.l.halfacre@gmail.com

Southern Illinois University Carbondale
Bachelor of Fine Arts, Communication Design, Glass May 2010

Research Paper Title:
AI and Gender in Persuasion:
Using Chatbots to Prevent Driving Under The Influence of Marijuana.

Major Professor: Dr. Yuhosua Ryoo