FROM SCARING TO STIGMA: AN EXAMINATION OF STIGMA'S AND RELATED CONSTRUCTS' ASSOCIATION WITH EPPM-FRAMED MESSAGES AND THE ETHICAL DILEMMAS OF HEALTH COMMUNICATION

BY

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Abstract

Fear appeals have long been one tool in the communication discipline's strategy to inform the public about health behaviors and conditions. More specifically, one fear appeal framework, the Extended Parallel Process Model (EPPM), has received the lion's share of scholarly attention in the past few decades. However, this project posits that by increasing the public's perception of a health behavior's threat and efficacy (the two prominent components of the EPPM), that secondary audiences (those who do not participate in the specific health behavior) may create or maintain stigma and other negative attitudes toward primary audiences (those who do engage in the particular behavior). This research explores the relationships between threat, efficacy, stigma, perceived responsibility for one's behavior and health outcomes, and discrimination via messages on two similar topics: smoking and vaping (using electronic cigarettes).

The original aim of the study was to use an experimental design to manipulate secondary audience perceptions of the threat and efficacy related of smoking and vaping behaviors and cessation. However, the manipulation checks were only partially successful, so, instead, the study utilized general threat and efficacy perceptions to examine relationships stigma as a predominantly observational study. Additionally, two constructs and measures, responsibility and stigma, were critiqued and explored for their robustness and predictive power, and components of perceived responsibility were tested for mediation between perceived threat and efficacy and stigmatization of people who smoke or vape. Finally, locus of control and selected demographic variables were tested for potential differences in the amount of stigma or related concepts assigned to others who smoked or vaped.

Messages regarding smoking or vaping, along with measures for perceptions of threat, efficacy, controllability, attributions, negative emotions toward people who engage in the behavior, stereotypes about people who engage in the behavior, blame, and discrimination were randomly disseminated to a large number of participants via Amazon's MTurk. Using correlations, multiple regression, and univariate analyses yielded partial support for the project's main premises. Although the smoking topic mostly produced null findings (perhaps because of ceiling or floor effects), the vaping topic did demonstrate moderate relationships between threat perceptions, responsibility constructs, stigma, blame, and discrimination for secondary audiences. Responsibility perceptions also partially mediated the relationship between threat and stigma. Efficacy was not associated with any of the aforementioned variables for either topic. Finally, a new discrimination measure was investigated, responsibility did include controllability and attribution perceptions, and additional variance was established by enhancing traditional stigma scales with measures of negative emotions and stereotypical thoughts.

This dissertation discusses the rationales for the importance of considering ethical dilemmas when communicating threat to the public, provides rationales for the proposed hypotheses and research questions, explicates the methods used to collect and analyze data, presents the specific findings, and discusses implications, future research, and limitations of the project.

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Chapter One: Introduction and Overview

Chapter Overview

For over sixty years, fear appeals have enjoyed a great deal of attention in both scholarly research and public application to persuasive messages (Larson, 2013; Mongeau, 2012). However, less attention has been paid to the unintended negative consequences fear tactics may have on particular populations. Some scholars have argued that certain persuasive strategies employed by message designers can benefit some audience members, while creating unintended consequences for others (Cho & Salmon, 2007; Guttman, 2001; Guttman & Thompson, 2011). Although there has been work done on maladaptive fear appeal outcomes (e.g., issue and message derogation, defensive avoidance, denial, reactance, and perceived manipulation (see Popova, 2012), no research has yet focused on whether fear appeals potentially enhance or reinforce stigma.

The Extended Parallel Process Model (EPPM) has long-been a popular framework for fear appeals in health contexts. Thus, whether EPPM-framed messages enhance or reinforce stigma is an important question. Further, the role of perceived responsibility for initiating and continuing a health behavior, and consequences stemming from that behavior, may mediate EPPM messages and stigma. Although employing the EPPM may be an effective persuasive strategy for the dissuasion of many health behaviors, it should be more carefully considered for its unintended effects before implementation; these messages' potential to stigmatize and marginalize may impact the very groups they are meant to assist.

As health scholars and message designers, we have an inherent duty to consider the difficult ethical decisions that come with our field. We must repeatedly decide whether the means to change health behavior justify the ends. Do we design messages that help a portion of

the population but harm another? What if the message not only hurts a segment of the population, but that segment is the one that needs the most help?

Often, we consider the target audience, and sometimes individual-level or cultural factors of that audience, before we design a health message. However, we do not as consistently consider whether particular persuasive strategies work well for an individual condition or behavior. Additionally, we often fail to consider how messages may indirectly affect our target audiences via secondary audience exposure. As message designers we frequently default to strategies that have been used repeatedly based on perceived tradition versus careful deliberation. Not only does this risk desensitization to a specific approach, but what if this approach is no longer making changes that are a balanced tradeoff for the potential harm they cause?

This dissertation will examine one persuasive framework that has been used for innumerable health messages and topics: The Extended Parallel Process Model (EPPM). I argue that it is possible that these fear appeals may reinforce stereotypes or stigma toward people engage in a message-admonished behavior, or fail to adopt a recommended behavior, specifically concerning "high risk" health topics. A message may be designed for prevention or cessation, aimed toward a specific group or area, and/or targeted at people who have an illness or engage in a risky behavior; however, much broader audiences see these messages. How do secondary audiences (those for whom a message is not specifically designed) process fear appeals, and what do they think of people who do engage in the risky behavior or who fail to change? How does this affect the processes of individual or societal moral judgments and stigma assignment, and how do these judgments ultimately affect the lives of the stigmatized group, as well as broader community issues? These questions will be explored in this project, along with other nuances of the message-to-stigma process.

Specifically, this project investigates how people respond to fear appeal messages about smoking/electronic cigarette use when they do not enact these behaviors themselves. Exploring these processes are important: stigma (and its internalization by the stigmatized) has been correlated with lower self-esteem, substance use, poor physical, and mental health, and less satisfaction with life (Corrigan, Kuwabara, & O'Shaughnessy, 2009; Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Meisenbach, 2010). Stigma also hinders disclosure, reduces treatment-seeking behaviors, and decreases motivation for behavior change (Earnshaw & Quinn, 2012). Thus, a cycle is created in which negative perceptions are continually reinforced by both public attitudes and the reception of that attitude by the stigmatized. Ultimately, this research will work toward suggesting new ideas for reaching audiences who participate in risky behaviors while minimizing group marginalization and stigmatization and, thus, negative emotional and health outcomes. The rest of this chapter will: first, explicate how public health communication campaigns have unique ethical dilemmas that deserve attention; second, explain the ethics unique to the EPPM; and third, outline the goals of this dissertation.

Public Health Communication Campaigns

Public and health communication campaigns come in many forms, utilize a variety of channels, and use (or sometimes lack) theoretical underpinnings of various communicative strategies. Public communication campaigns, more formally,

> can be defined as purposive attempts to inform or influence the behaviors in large audiences with a specified time period using an organized set of communication activities and featuring an array of mediated messages in multiple channels generally to produce noncommercial benefits to individuals and society (Rice & Atkin, 2013, p. 3).

Similarly, paraphrasing his piece with Storey in 1987, Rogers (1996) states

> A communication campaign (a) is purposive, intended to cause specific human behavior changes; (b) is aimed at a large number of individuals; (c) is conducted within a specified period of time; and (d) involves an organized set of communication activities (p. 16).

According to campaign scholars such as Rice and Atkin (2013) and Rogers (1996), public communication campaigns have key commonalities, but may be about any topic. Public *health* communication campaigns (henceforth referred to as PHCs), more specifically, are a distinct subset of communication campaigns that began to solidify in the early 1970's (Rogers, 1996). Rogers (1996) considers the Stanford Heart Disease Prevention Program (SHDPP) one of the first coordinated and coherent health campaigns of its kind and an important benchmark of the PHCs sub-discipline. This first collaborative effort between medical and communication scholars led to SHDPP's implementation in additional, larger cities, as well as created momentum for other PHCs throughout national and global communities, eventually resulting in the large, interdisciplinary, and public-health-oriented discipline as we currently recognize it (Bernhardt, 2004; Maibach, Abroms, & Marosits, 2007; Nelson, Brownson, Remington & Parvanta, 2002; Parvanta, Maibach, Arking, Nelson, & Woodward, 2002). Combining science, medicine, health education, health psychology, media, and communication has created a large body of health communication scholarship. Public health communication literature has blossomed, advancing theory and practice in many areas, including environmental health, policy, global health, media effects, and public health campaigns (Abroms & Maibach, 2008; Bernhardt, 2004; Kreps, 2001; Kreps & Maibach, 2008).

The Ethical Dilemmas of PHCs

Although PHCs have been employed in a number of settings and applied to myriad health topics, many scholars have noted that PHC designers and practitioners walk a fine line of ethical

dilemmas, many of which are too often overlooked (e.g., Guttman, 2000; Guttman & Salmon, 2004; Cho & Salmon, 2007). By default, designing and implementing PHCs requires researchers and organizations to perform value judgments for the public (Guttman, 2000; Parrot, 2004). According to Seedhouse (1988), "work for health is a moral endeavor" (p. 14). However, Seedhouse also states that working toward a healthier society should not be a "moral endeavor in the sense of a crusade" (p. 14). Guttman (2000) rightly points out that health communication often carries tones and insinuations of "right and wrong" as moral implications and asserts ideologies like virtues and societal acceptance. More specifically, PHCs are often caught among ethical dilemmas, although researchers rarely consider or reflect on these potential problems (Guttman, 2000). For example, attempting to alter health behaviors may "vilify particular behaviors, sanctify others, or inadvertently stigmatize certain members of society" (Guttman, 2000, p. 172).

Parrot (2004) advances a similar argument spanning topics from interpersonal, public, and medical communication. She argues that communication is the core of all of our endeavors to create a healthier society, but researchers often oversimplify this task and fail to consider complex environmental and implicit messages (Parrot, 2004). Fleming (2007) asserts that researchers and PHC promoters need to be more reflective of their own biases and value judgments when designing messages. Specifically, he argues that by failing to examine our own agendas, we may create messages that harm, rather than appropriately assist audiences (Fleming, 2007). Additionally, Levin (1987) argues when promoting societal goals, health interventions may infringe on personal autonomy, independent decision-making, and individual privacy.

In addition to the moral consideration of how we communicate about health behaviors, Rogers (1994) and Guttman (2000) also discuss the ethical dilemma of distribution: PHC

researchers and practitioners work under the auspices that health persuasion and messages are to promote the public good, but whether beneficial results are equally distributed often lacks substantial consideration. In agreement, Stephens (2010) states, "Many health promoters have recognized that a focus on changing individual health behaviours [sic] actually increases disadvantage by ignoring the social situation of health" (p. 994).

Overall, Ratzan (1994) states that we must use value judgments to determine when and to what degree to use the most persuasive communication tactics, while considering the ethics of applying these tactics to each unique health topic, message, and population. Summing up the larger picture, Guttman (2000) concurs, stating "value judgments are performed in all facets of an intervention. Inherently, they involve ethical considerations and raise ethical dilemmas" (p. 173).

The Persuasive Dilemma

There are two specific categories of these dilemmas that will be addressed in this project. The first is what Guttman (2000) calls *The Persuasion Dilemma* (p. 175). By its very nature, using various persuasive strategies is always defined by its difficulty in balancing autonomy with the "greater good" (Guttman, 2000). PHCs collectively share a goal to promote health-positive behaviors. However, the persuasive strategies often employed in these endeavors may benefit some audiences (such as target audiences) and unnecessarily create fear and anxiety in others (like non-target audiences) (Guttman, 2000). In fact, one popular strategy for PHCs is the use of persuasive tactics to *intentionally* induce anxiety and fear among primary audiences (e.g., Witte, 1994). In other words, although facilitating these negative emotions may be a by-product, the arousal of fear, anxiety, or uncertainty is also used for a purposive and targeted strategy. The

overlap between purposeful and unintentional fear and anxiety can result in message distribution that is skewed and creates social pressure toward, and control of, particular populations.

Considering the breadth of the audience these messages may reach, it is important to determine how secondary audiences view these messages, especially with respect to message-induced reactions toward target audiences. A message's primary goal may be cessation, and when viewed by secondary audiences it also may bolster prevention efforts. However, how else might secondary audience perceptions change toward the behavior or people who enact it? In this sense, the potential for persuasion to slide toward manipulation is apparent, considering fear-based strategies are employed to change perceptions and discourage autonomy and may increase social pressure and control (Guttman, 2000). Salmon (1989) encapsulates the *Persuasion Dilemma* by stating, "At the center of this [ethical] conflict is the fundamental tension between social control and individual freedoms" (p. 19).

If using highly persuasive, but fear-, anxiety-, or guilt-inducing messages, is an ethical quagmire, as Guttman (2000), Witte (1994), and Salmon (1989) argue, why are these strategies so often employed in PHCs? According to Guttman (2000), one explanation is that target populations often report the belief that these strategies would be potentially effective. However, the question remains as to how optimal or ethical this tactic is, due to its nature of utilizing self-reported audience weaknesses or susceptibilities (Guttman, 2000). Again, by employing emotionally charged persuasive messages to control public perceptions, the line between personal choice and social control becomes blurred. The difference in message distribution and interpretation coupled with different audiences may lead to a situation in which those who are already marginalized become more so by the social control established by the hegemonic group and reinforced by the fear-based messages.

Inadvertent Harm

The second category of ethical dilemmas surrounding this project is termed *Inadvertent Harm* (Guttman, 2000, p. 185), and is described as unintentionally causing negative outcomes for either target or non-target populations. Although awareness of potential inadvertent outcomes of PHCs is present in the campaign literature, there is a dearth of research or in-depth discussion on the topic (Guttman, 2000; Cho & Salmon, 2007). Recognizing that unintended effects were acknowledged but understudied, Cho and Salmon (2007) responded to this gap stating, "The understanding of the consequences of communication will neither be complete nor objective if it is confined to intended effects" (p. 294).

Although research on inadvertent outcomes is severely lacking compared to studies on the intended effects of PHCs, awareness of broad potential consequences have long-standing roots in communication, as well as in other disciplines (Cho & Salmon, 2007). For example, the mathematical model of communication (Shannon & Weaver, 1949) acknowledges that "noise" can interfere with the sending and receiving of messages, altering intended meanings and outcomes. Similarly, Schramm (1961) recognized the potential for unintended effects, based on the premise that only message senders can be completely controlled. Within the mass communication literature, scholars such as Westley and MacLean (1957) and Hovland (1959) have acknowledged the potential for inadvertent outcomes.

Other disciplines have also shown awareness of the phenomenon of unintended effects, or, at the least, of ideas that are similar in nature (Cho & Salmon, 2007). In psychology, Hovland, Janis, and Kelly (1953) discussed boomerang effects, and Brehm (1966) theorized psychological reactance. The medical discipline has long-recognized "iatrogenic effects," or negative outcomes created by a treatment (Illich, 1976). Despite the variety of disciplines that

have recognized or incorporated unintentional outcomes into their research, communication continues to lack substantial study on these potential outcomes, with few exceptions (e.g., psychological reactance research; Guttman, 2000; Cho & Salmon, 2007). This study begins to fill this gap.

Narrowed further, both Cho and Salmon (2007) and Guttman (2000) contend that unintended effects are particularly important to understand and study within the context of PHCs. This specific importance lies within the nature of PHCs; they are social actions that are designed to persuade large numbers of people to change beliefs, attitudes, and behaviors regarding health topics (Rogers, 1996; Rogers & Storey, 1987; Cho & Salmon, 2007). Overall, Cho and Salmon (2007) offer these typologies and dimensions to help scholars identify, and possibly account for or measure, unintended effects of PHCs. Obviously, many of these consequences are complex and overlapping, and the authors intended the typologies to assist in identifying the primary effect, although related effects are often observed together. The authors liken these consequences to iatrogenic effects of medicine.

> Health communication campaigns may not differ from the surgeon's scalpel or prescription drugs; the intention to improve health is behind all three of these, but none of them are invulnerable to producing iatrogenic effects…But intricately woven into the fabric of the everyday environment, the effects of communication may be more permeable in society than those of medicine (Cho & Salmon, 2007, p. 311).

Certainly, these authors aim to heighten the awareness of PHC researchers and designers, illuminating the power, and possible consequences, that communication holds.

PHCs are particularly powerful as a form of mass communication and, increasingly, mass mediated communication. Mass communication is defined as a message that is created and

disseminated by an individual or group and targeted toward a large number of people via a number of possible media (Biaggi, 1999). Many PHCs now use a variety of mass communication channels for their messages, reaching far more people than ever before. While billboards, radio, television or magazine-published public service announcements have been popular mediums for PHCs for decades, they are now also considered "traditional" media (Brown & Bobkowski, 2011). In addition to traditional forms of media (e.g., billboards, flyers, posters, magazines, radio, direct mail, and television), the new millennium has ushered in a new era of mass communication and media. Now PHCs also appear in embedded Internet ads, YouTube Channels and advertisements, social media, satellite radio, Internet television and movie programing, like Hulu, and even video games (Brown & Bobkowski, 2011). Instead of a few television channels that broadcast for a limited number of hours, our televised media has turned into thousands of channels, both online and via cable, that broadcast twenty-four hours a week, 365 days a year. Generations who have known nothing but this new and expansive media landscape have been called the "constant contact" generation by some scholars (e.g., Clark, 2005).

Combining "old" and "new" media results in far-reaching PHCs, which are often, and inevitably, viewed by people other than the campaign's target audience. In some ways, this is beneficial to PHC designers – people may share PHC messages with others in social media or recommend PHC messages via online reviews, blogs, or tweets. These "shares" may reach audiences that are "in need" of the message, gaining more exposure to target audiences than the PHC designers could have achieved in prior decades. More so than ever, the PHC has the ability to take on a "life of its own." However, this also means PHCs are often viewed by audiences for whom the message was not intended. Thus, this expansive reach also has ethical pitfalls; because mass audiences now see and share PHCs more than ever before, we are obligated to consider the

design of messages, what secondary audiences take away from these messages, and outcomes of sharing messages (formally or informally) with other non-target audiences (in-group members).

According to Smith's (2007) model of stigma communication, people do communicate stigmatizing messages about illness or conditions to others in a given society, eventually creating new social norms (and non-norms). Those who fall outside of these norms are not tolerated, and society distances itself from these groups in a variety of ways (Smith, 2007). What we do not know, however, is how messages, especially those designed to arouse emotions such as fear or disgust, are encoded, processed, and interpreted by secondary audiences. Understanding secondary audiences' reactions toward fear appeal messages, and attitudes toward primary audience members as an unintended outcome, may illustrate the initiation or reinforcement of Smith's model. Certainly, these secondary audience reactions could be unintended effects of broad exposure to messages that repeatedly cast primary audiences in a way that creates or promotes stigma in the eyes of secondary audiences. This is an especially pressing inquiry considering the rise of new media and such far-reaching mass communication.

However, unintended effects are rarely studied for many reasons: First, many of these effects do not become apparent for long periods of time, beyond when researchers introduce and study their interventions; second, scholars design their studies under the assumption that the goal is positive change and create their post-measures to reflect that assumption; finally, unintended effects are complex, overlapping, and multi-dimensional, making it difficult for researchers to determine for what effects they should be looking. This project's goal is to examine if and how fear appeals may create or reinforce the unintended effect of stigma. In addition, the discussion chapter will consider how other, related, inadvertent effects (such as social norms or system activation) may co-occur with stigma.

The EPPM and Ethical Dilemmas

The EPPM (Witte, 1992) is a framework used to design fear appeals, most often within the realm of health communication campaigns. The model posits that in order to persuade people to change their behaviors, messages must have two primary components: threat and efficacy. Theoretically, when an audience perceives substantial threat from a behavior or condition, it creates fear in that audience. If a strong efficacy message is also included, people turn to danger control processes; in other words, people enact the recommended action to assuage their fear. If an efficacy message is not present, people utilize fear control processes, methods of eliminating the fear without changing the behavior.

The EPPM presents potential ethical dilemmas in two distinct ways. First, it may create conditions of social control. If secondary audiences determine a health behavior to be bad, scary, dangerous, or irresponsible based on exposure to fear appeals, social attitudes may shift regarding those who do the behavior. If these attitudes are reinforced by repeated fear appeal exposure, stigma, marginalization, and discrimination may occur, creating an atmosphere of social control, pressure, negativity, or even hostility toward those who engage in the behavior.

One study (Lee & Cheng, 2010) examined the ethicality of anti-smoking messages using Baker and Martinson's (2001) framework, TARES, for analyzing the ethics of a campaign messages. They found reliability to be good, coding over 800 anti-smoking messages using TARES, which assesses messages for truthfulness, authenticity, respect for audience, equity, and social responsibility. Messages were also coded for emotional appeal and frame to determine which combination of message features scored highest on the TARES ethics scale. With respect to inducing fear or anxiety, Lee & Cheng (2010) found that messages utilizing these emotions scored the lowest on equity using the TARES framework for ethicality (Baker & Martinson,

2001). These types of messages affected audiences differently, skewing the equity and distribution of the anti-smoking efforts. In other words, it is possible that these appeals may "preach to the choir" more so than assist audiences in the most need of help. Unfortunately, few other scholars have taken advantage of this framework for assessing ethicality since its development in 2001 (e.g., Coleman & Major, 2014; Lee, 2011; Lee & Nguyen, 2013), and most of these pieces are in journals that specifically address ethics, such as *The Journal of Mass Media Ethics*. Moving beyond these few studies, no research has focused on how the questionable ethicality or distribution of fear appeals may affect *secondary* audiences or their attitudes toward *primary* audiences.

Second, many unintended outcomes may inadvertently harm primary audiences through the development or reinforcement of social stigma and control. These issues are particularly important from a critical-cultural perspective; research on risky behaviors (such as smoking) has shown marked differences between socio-economic status (SES), race, and perceived social power (e.g., Bayer & Stuber, 2006). Groups of particular ethnicities, working class, SES, or social power are already at risk for social control and marginalization and may incur disproportionate inadvertent harm from social systems, messages, and discrimination.

Based on the specific conditions under which stigma occurs and may be defined, stigma may occur as an unintended consequence to fear appeals through several of Cho and Salmon's (2007) typologies. Some commonly studied fear appeal consequences, such as defensive avoidance, perceived manipulation, source derogation, denial, and reactance are what Cho and Salmon (2007) label "boomerang" effects, and these have been studied, albeit scarcely, within the EPPM literature (e.g., McMahan, Witte, & Myer, 1998; Popova, 2013; Umphrey, 2004; Witte, 1994; Witte & Morrison, 1995; Witte & Morrison, 2000), as well as the social norming

literature (e.g., Campo & Cameron, 2006; Wechsler et al., 2003). However, these have all been studied as outcomes for primary/target audiences. A campaign's potential to influence stigma production among secondary audiences has not been considered. Stigmatizing people who engage in a particular health behavior (primary audiences) may occur through obfuscation, social norming, culpability, social reproduction, or system activation (Cho & Salmon, 2007).

For example, social norming (as defined by Cho & Salmon, 2007) has been hailed as a successful unintended effect in many ways. By changing public perceptions of what is healthy, acceptable, or normal, society may slowly conform to new standards. A prime example is the difference in smoking rates between the 1950's and today. During 1954, over 45% of Americans reported smoking (Sadd, 2008), however the Centers for Disease Control and Prevention (CDC) now estimate that only 1 in 5 people smoke (approximately 20%; CDC, 2015). Overall, Americans report a negative attitude toward smoking, a change that has slowly occurred over decades. However, this strategy also potentially leads to stigma. As social norms change, those who do not conform are marginalized and shamed (Goffman, 1963; Cho & Salmon, 2007).

Likewise, system activation (Cho & Salmon, 2007) creates a community in which policies or other systems change in light of health information or a new norm. Those who argue against these changes or do not comply are potentially targets of marginalization. This type of social pressure may work to change behaviors (e.g., Kim & Shanahan, 2003; Yanovitzsky & Stryker, 2001). However, Guttman (2000) argues this type of strategy is manipulative and unethical. For example, Stuber, Galea, and Link (2008) found that antismoking policies (both enacted by government and private businesses) heightened stigmatization of smokers, and socially expressed disapproval corresponded to the marginalization and stigmatization of smokers. Of more concern are the disparities in income, race, and education between smokers

and nonsmokers; essentially, those being stigmatized are already those with the least power in society (Bell et al., 2010; Stuber, Galea, & Link, 2008).

Using social pressure and stigma as a persuasive tool is the center of an active public health debate. Although there have been some studies that have induced stigma (or the threat of stigma) to induce fear and move people to act (e.g., Smith, Ferrara, & Witte, 2007), some public health and communication scholars argue that stigmatizing groups is never acceptable. Some risky behaviors are predominantly found in disadvantaged groups, and by stigmatizing these groups or individuals we further contribute to health-related consequences, marginalization, and disparities (Bell, Salmon, Bowers, Bell, & McCullough, 2010; Guttman, 2000; Stuber et al., 2008). Others disagree, claiming that there may be situations or times in which, whether intentionally or not, stigmatizing groups is morally defensible (e.g., Bayer, 2008). Most of this debate has revolved around risky behaviors such as smoking, and social norming and system activation as modes for change. Fear appeals like the EPPM naturally create fear and attitude change through repeated exposure; this also means they naturally contribute to new norms, social pressures, and controls.

Although several of Cho and Salmon's (2007) unintended consequences, as well as other theories, will be explored during potential explanations of study results, of particular interest to this project is the unintended effect of culpability (Cho & Salmon, 2007). Smith (2007) uses a similar term, personal responsibility, to describe public perception of how controllable a person's actions are. If they are deemed responsible, emotions such as anger and disgust are experienced toward the stigmatized group or individual, and little pity or desire to help is present.

Guttman (2000) discusses the issue of responsibility, or culpability, as well, pointing out that by making health a "value," which all PHCs tend to do, this leads to a separation of the

healthy and the sick. Further, Guttman states that this can be further divided into the perceptions of the healthy, the responsible sick (those who had no control over their behavior or illness), and the irresponsible sick (those who made choices leading them to poor health or risky behaviors). In this way, emphasizing responsibility in a PHC can create health as a metaphor; those who have it are worthy, and those who do not are unworthy. Essentially, promoting responsibility is an ethical dilemma because this ties health to a value with a moral dimension, and can, thus, lead to stigmatization of those perceived to be irresponsible. EPPM-framed health messages inherently create implications of personal responsibility; if a behavior is dangerous and there is a way to change it, then by not doing so a person is being irresponsible and is unworthy of help, pity, or understanding.

This dissertation will focus on the specific unintended effects of responsibility, stereotypes, stigma, and discrimination promoted or reinforced through fear appeals. Using persuasion to create fear has numerous potential ethical pitfalls, as Guttman (2000) highlighted. However, does the use of the Extended Parallel Process Model (EPPM) differ? The EPPM, as a fear appeal, contains a threat component, but it also theoretically requires the inclusion of efficacy (Witte, 1992; 1994). This efficacious portion of the message may help target audience members manage their fear by changing their behavior. However, as Cho and Salmon (2007) point out, PHC's reach both target and nontarget audiences and these messages and resources are often unequally distributed to those who need them least. The inclusion of efficacy may also insinuate that a behavior is easy to change, but EPPM messages also tend to omit information about the complexities of environment, addiction, and social groups. A simple threat message coupled with an efficacy message often lacks contextual information and may ultimately reinforce what secondary audiences already know, creating or reinforcing stigma based on these

perceptions of and attitudes towards those who engage in the admonished behavior. As Guttman (2000) asks,

> How does one reconcile the use of persuasive appeals that on one hand serve to scare people about potential hazards and thus raise their motivation to avoid it but on the other hand may present a negative image of, label, and adversely affect the identity of others? (p. 187)

Dissertation Goals and Contributions

This project consists of an experiment, as well as the development of adapted scales. It will investigate whether the EPPM (particularly its two primary message features) create, increase, or reinforce stereotypes and stigma assigned to people who enact an admonished risky health behavior. For this project, people who do not engage in the behavior that a fear appeal is addressing are secondary or non-target audiences, whereas people who do engage in the behavior are considered primary or target audience. To be clear, the interest of this project lies in how secondary audiences react toward primary audiences along dimensions of stigma and discrimination, considering the ever-increasing potential for incidental exposure due to the expansion and proliferation of mass media. Perceived responsibility is hypothesized as a mediator between EPPM-framed health messages and outcomes like stigma, stereotypes, and negative affect toward primary audiences, and interpersonal, social, and political outcomes. Locus of control, socioeconomic status (SES), and ethnicity will also be examined to assess differences on outcomes such as stigma, stigma-related variables, and dimensions of supportive and helping outcomes, as well as to consider power differentials. Finally, new measures of helping/discriminatory behavior and adapted measures of behavior-specific stereotype endorsement will be created and tested for validity and reliability.

This project will extend current stigma and communication scholarship in three distinct ways. First, little research has explored the types of messages that initiate, reinforce, or create health stigma or stereotypes. As such, this project will examine how a particular message design, commonly utilized by health campaigns, may affect nonstigmatized populations' beliefs, affective responses, and behaviors toward groups that enact message-admonished risky health behaviors. Second, stereotypes are theorized as an important part of the stigma and associated discrimination. This project will collect stereotypes of people who engage in particular behaviors and this qualitative data will be explored and analyzed to either produce new stereotype endorsement scales or adapt existing measures for each behavior. Similarities and differences between stereotypes for two different risky behaviors will be explored for potential theoretical implications. Third, both Witte's (1992) EPPM model, Smith's (2007) piece on stigma, Weiner's (1995; 2006) work on social judgment theory will be considered and explored for the potential relationships between stigma and responsibility perceptions. This dissertation will offer chapters that review the literature on key concepts to this study, followed by hypotheses and rationales, project design, and methodological and statistical approaches. The pretest will inform the main study design, and results will be reported in chapter four. Finally, I will present a chapter on the study's scholarly and practical implications, trajectories for future study, and conclusions. Included in this section will be how the results are situated within the broader context of PHC ethics and unintended consequences.

Conclusion

This chapter outlined the broader issue of unintended consequences of health messages and previewed stigma as an ethical dilemma. It also outlined the goals of this dissertation. The next chapter will discuss the literature, as well as lay out hypotheses and research questions.

Chapter Two: Literature Review, Hypotheses, and Research Questions

Chapter Overview

The Extended Parallel Process Model (EPPM) is a framework for fear appeals in health contexts. Thus, whether EPPM-framed messages enhance or reinforce stigma is an important question. Further, the role of perceived responsibility for initiating and continuing a health behavior, and consequences stemming from that behavior, may mediate EPPM messages and stigma. Although employing the EPPM may be an effective persuasive strategy for the dissuasion of many health behaviors, it should be more carefully considered for its unintended effects before implementation; these messages' potential to stigmatize and marginalize may impact the very groups they are meant to assist.

The Extended Parallel Process Model

Within the fear appeal literature, few frameworks have received as much attention as Witte's (1992; 1994) EPPM, which posits that message recipients will attempt to control either their fear of a health behavior or the perceived danger associated with that health behavior. Which route they enact, however, will depend on how the message is communicated. Witte (1992) posits that a message should adequately communicate the threat of a behavior, as well as an adequate and efficacious recommended response, in order to best motivate behavior change.

The threat proposed by the EPPM is comprised of two components: severity and susceptibility. Assessing both of these components determines the magnitude of threat appraisal. If the message is perceived as sufficiently threatening, it arouses fear (Witte, 1994). Like threat appraisal, efficacy necessitates two specific message components, self- and response-efficacy (Witte, 1992; Witte, 1994). The appraisal of both components is imperative in the determination of the audience's final response to the message (Witte, 1992).

Following exposure to an EPPM message, recipients will engage in one of three types of message processing (Roberto et al., 2011; Witte, 1994). Low-threat messages are likely to result in dismissal. High threat messages lacking recommended response are likely to result in the attempt to control the emotion of fear but not to change the actual behavior. Messages with a balance of both threat and recommended response are most likely to result in behavioral change (danger control). Thus, it is the appropriate balance of threat and recommended response that are most likely to affect positive behavioral change in message recipients (Roberto, et al., 2011; Witte, 1992; 1994; 1998).

Scare tactics have made their way into the norm of mainstream health messages for many health behaviors (for example see de Hoog, Stroebe, & de Wit, 2005; Witte & Allen, 2000). Although fear appeals abound within health campaigns, they may be effective for some health behaviors, but have no effect on others. Perhaps more problematic are the unintended consequences fear appeals may have on message recipients; if designed improperly, these appeals can result in maladaptive responses such as denial, derogation, or reactance in primary audiences (Maloney, Kapinksi, & Witte, 2011; Roberto et al., 2011; Witte, 1992, 1998). Whether designed properly or not, audiences who are exposed to fear appeals, but who do not engage in the target behavior (secondary audiences), may develop stigma towards those who do (Guttman & Thompson, 2011). Worse, for those who do engage in the admonished behavior, research shows that public assignment of stigma often leads to internalized stigma, resulting in poor social and health outcomes (e.g., Cohen & Garcia, 2005; Earnshaw & Quinn, 2012; Meisenbach, 2010; Quinn & Chaudoir, 2009; Stuber, Galea, & Link, 2008; Weiler & Crist, 2009).

Stigma

Stigma has received relatively less attention in the communication literature than the EPPM (e.g., Smith, 2007). According to Goffman (1963), stigma applies to conditions that are generally perceived by the community at large as possessing "an attribute that is deeply discrediting" (p. 3), a personal failing, or shortcoming that reclassifies a person's social identity in a downward direction. According to Smith (2007), one of the few communication scholars who examines stigma and communication, stigma is "a simplified, standardized image of the disgrace of certain people that is held in common by a community at large" (p. 464). Goffman (1963) further explains, "We believe the person with a stigma is not quite human. On this assumption, we exercise varieties of discrimination, through which we effectively, if often unthinkingly, reduce his life chances" (p. 5).

A large portion of the literature in psychology, as well as in communication, focuses on how the stigmatized perceive and manage their stigma (Meisenbach, 2010; West, Yanos, Smith, Roe & Lysaker, 2011), as well as the negative effects this has on the marginalized group (e.g., Cohen & Garcia, 2005; Earnshaw & Quinn, 2012; Meisenbach, 2010; Quinn & Chaudoir, 2009; Stuber, Galea, & Link, 2008; Weiler & Crist, 2009). The stigma, and associated discrimination experienced by stigmatized groups, can lead to social isolation and segregation from society (Meisenbach, 2010; Strauser, Ciftci, & O'Sullivan, 2009). This marginalization often results in self-stigmatizing beliefs (internalization), and has been correlated with lower self-esteem, substance use, poor physical, and mental health, and less satisfaction with life (Corrigan, Kuwabara, O'Shaughnessy, 2009; Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Meisenbach, 2010). Stigma also hinders disclosure, reduces treatment-seeking behaviors, and decreases motivation for behavior change (Earnshaw & Quinn, 2012). Thus, a cycle is created in

which negative perceptions are continually reinforced by both public attitudes and the reception of that attitude by the stigmatized.

Potential EPPM message effects and stigma

Public opinions and attitudes are often influenced by message design. For example, fear, but also stigma perception, may be heightened when graphic images or language are included in messages, a primary strategy used to grab attention and emphasize danger. Graphic imagery has been found to heighten other negative responses, such as psychological reactance, to health behavior messages (LaVoie et al. 2016). Graphic or explicit language has also been found to arouse aversive emotional reactions across a host of health messages (e.g., see Buller, Borland, & Burgoon, 1998; Miller et al., 2007; Quick & Considine, 2008). Although campaign messages employing graphic images and language may be effective in some prevention efforts, these message features may also depict many of the stereotypes that create and reinforce public stigma or arouse negative cognitive and affective reactions toward those living with particular conditions or struggling with behavior change.

Fear appeals, by nature, may inadvertently result in stigma in other ways, as well. For example, a person who does not engage in a dangerous health behavior may see a fear appeal regarding that behavior and, assessing the threat, may believe that those who do engage in that behavior are disgusting, stupid, or morally contaminated. Research supports this assertion; Kerrick (1969) found that the higher the perceived severity of a behavior or illness, the greater the stigma and rejection toward the group with that behavior or illness. High threat messages are designed to maximize perceived severity. Therefore,

H1: Messages high in threat will be positively associated with stigmatization of those who enact the threatening behavior.

On the other hand, recommended response, if framed to be sufficiently efficacious, may ironically serve to increase stigma. Kerrick's (1969) study also found the more a behavior or illness was perceived as avoidable, the higher the occurrence of stigma and social rejection. Said plainly, an efficacious message may lead to the perception that the behavior is easy to change or avoid and that those who do not change must be apathetic, unintelligent, inconsiderate, gross, or weak-willed.

H2: Messages that include efficacy will be positively associated with stigmatization of those who enact the admonished behavior.

Finally, high stigmatization of others is not likely to lead to helping and supportive behaviors toward those who enact the admonished behavior (Goffman, 1963; Guttman, 2000; Smith, 2007; Weiner, 1995; 2006). Thus,

H3: Stigma will be positively correlated with discriminatory behaviors among those who do not enact the stigmatized behavior.

Stigma concept and operationalization

For the purpose of this study, a working definition of this concept should be described. Far too often terms such as stereotype, prejudice, discrimination, and stigma are used interchangeably in the literature and across disciplines. Smith's (2007) definition remains true to Goffman's, but still leaves questions unanswered regarding the differentiation between stigma and these other closely related terms. This project will be mindful of the conceptual overlap between terms often used, but rarely explicated, and will define and differentiate these terms for purposes of conceptual clarity and operationalization in the dissertation.

In short, stigma will be conceptualized as a combination of negative stereotypes (negative cognitions about a group of people) and negative affect (i.e., anger and disgust toward a group of

people). This operationalization is rooted in the stigma literature. For example, a stereotype is a cognitive link or belief that occurs during the process of stigmatization (Link & Phelan, 2001). Stereotyping occurs when ideas, people, representations, beliefs, or images become cognitively connected and (typically) automated (Fiske, 1998). Stereotypes may lead to stigma, but also remain as a component of stigma. Another notable differentiation between stereotypes and stigma is the potential valence of each; although all stereotypes are negative in that they exist, some stereotypical beliefs may not be negatively-valenced. On the other hand, stigma is always negative (Goffman, 1963; Link & Phelan, 2001; Smith, 2007). Thus, only negatively-valenced stereotypes become a cognitive component of the stigma concept.

Additionally, affect has been an important concept discussed in the stigma literature. Goffman (1963), Smith (2007; 2012; 2014), and Weiner (1995; 2006) all discuss negative affect toward a stigmatized group, most commonly anger and disgust. Weiner (2006) takes one step further by organizing affective reactions into what he terms "moral emotions," which are emotions aimed at others, based on people's perceptions of others' moral rigor or shortfalls and their responsibility to society.

In reference to the full process of stigmatization, Link and Phalen (2001) argue that individual and group labeling become tied to cognitive beliefs about personal and social identities and attributes. Labeling eventually leads to cognitive shortcuts between labels and beliefs or stereotypes about persons or groups to whom particular labels are affixed (Fiske, 1998; Link & Phalen, 2001). Further, Link and Phelan (2001) argue that this differentiation between "us" and "them" through labeling and separation results in negative attitudes and affect toward marginalized groups. According to Morone (1997), the further a group is separated from other majority groups, the more the majority groups perceive marginalized groups as lesser and less

deserving of kind treatment. Fiske (1998) agrees, and argues that as labels and stereotypes push perceptions of groups further from society's idea of the "norm," more negative attitudes and affective responses are generated toward those group members.

According to Goffman (1963) and Smith's (2007) explanations, discrimination is a component of stigma, but occurs as an outcome of the cognitive and affective processes. For the purpose of this study, I will measure the behavioral aspect (discrimination) as an outcome of the initial cognitive and affective stigmatization process.

Thus, to clarify, the operational definition of stigma, as well as its differentiation from closely related terms is as follows: Stigma is a negative identity assigned by "others" (and often internalized by the stigmatized group) consisting of negative stereotypical beliefs, negative affect, and the systematic status loss of discrimination. When negative stereotypes (cognitions) and negative affect (emotions) exist about a particular group, stigma occurs and the out-group is discriminated against and suffers status loss in society.

Measuring stigma. Prior research on stigma consists largely of stigma scales, often from the viewpoint of the stigmatized, and they are adapted repeatedly to reflect the topic of interest. However, there may be a more nuanced way to assess stigma. This project will offer competing models to determine whether stigma is better measured by a popular stigma scale alone or as combination of observed negative stereotypical cognitions and negative affect toward people who enact an admonished behavior, leading to helping or discriminatory outcomes, or whether the current stigma scales should remain the status quo or be adapted.

RQ1: Is stigma better measured as a combination of cognitions and affect compared to standard stigma assessment via validated scales? Or should both operationalizations be present?

Responsibility and stigma

This project addresses the role of responsibility as a mediator between EPPM messages, stigma, and helping/discriminatory outcomes. Scholars have found support for the importance of the attribution of perceived responsibility for those living with and communicating about stigma. Personal responsibility messages are likely underpinned by Western cultural ideas of a person's role to act rationally and responsibly to make private choices and move toward individualized outcomes (Guttman & Ressler, 2001). Unfortunately, emphasizing personal responsibility allows for victim-blaming and stigma, especially when used in the context of risky behaviors or misunderstood health conditions (Guttman, 2000; Guttman & Ressler, 2001, Link & Phelan, 2001; Smith, 2007; van Kesterson, Hospers, Kock, & van Empelen, 2005; Weiner, 2006). In short, culpability instills the idea that people are responsible for their own choices, ongoing behaviors, and outcomes, so if they engage in something risky and fall ill, it is their fault for not taking proper health precautions or changing health behaviors. It can create distortions in assignment of blame, and studies have shown that those who engage in the behavior internalize blame. Overall blame and perceived responsibility often undergird societal perceptions of deficits in moral character.

Further, Guttman (2000) argues that those who do not change behaviors, by default, look irresponsible to other audiences. Some of the most dangerous and risky health behaviors are associated with addiction or environment, conditions that require a more complex solution than a message that simply states "stop doing it." Guttman and Ressler (2001) also agree that emphasizing personal responsibility in health campaigns or media messages is fraught with negative unintended consequences because the idea of culpability is tied to the concept of moral

responsibility toward self and others. Guttman (2000) includes the dilemma of culpability in her list of inadvertent outcomes, stating,

> The emphasis on individual responsibility presumably is based on the assumption that particular health-related behaviors are freely chosen or at least under the voluntary control of the individual…The intervention's intended populations, however, may not adopt recommended practices because of the constraints imposed by economic or sociocultural circumstances… (p. 189).

Almost all health behaviors and illnesses have social and environmental determinants, in addition to personal responsibility, however, society rarely sees or understands the larger social picture of health issues, especially those linked with risky behavior (Cho & Salmon, 2007).

Further support of perceived responsibility as a factor in stigma assignment comes from Cho and Salmon (2007), who argue that culpability is one unintended effect potentially caused by public health campaigns (PHC). Culpability perceptions may result when audiences believe that a health issue or behavior is based on personal responsibility, and give little to no thought to other initial causes or contributing factors to the continuation of a health problem or behavior, such as social or environmental influences. According to Cho and Salmon (2007), when campaign and media messages emphasize personal responsibility for one's own health behaviors, this influences the public, and policy makers, to put too much weight on the individual's choice or control of that behavior. Niederdeppe, Shapiro, & Porticella (2011) found support that personal responsibility perceptions resulted in a lack of support for the obese and obesity related policy.

Weiner (2006) posits that causal controllability assessments may influence affective responses toward people who engage in particular behaviors; a person with little or no control

over their condition or behavior may elicit sympathy or pity, whereas a person who is perceived as possessing control, or responsibility, may be met with anger or disgust (Goffman, 1963; Link & Phelan, 2001; Smith, 2007; Weiner, 2006). This aligns with Guttman's (2001) explanation of perceptions of the healthy, the responsible, and the irresponsible sick. To test this theory, Weiner, Perry, and Magnusson (1988) presented ten different conditions/stigmas and had participants rate each with respect to its personal responsibility (cause and controllability). Findings suggest that conditions ranked low in responsibility are associated with liking, pity, and desire to offer social or financial assistance. However, conditions ranked high in perceived responsibility were correlated with increased anger, disliking, and lowered desires to assist in any way (Weiner, Perry, & Magnusson, 1988).

To further investigate this phenomenon, Weiner and colleagues (1988) tested messages that manipulated the controllability of several diseases. They found that when participants were led to believe a disease or behavior was controllable, they reacted with little pity and a lot of anger. However, uncontrollable behaviors and conditions were the opposite, with little anger and a lot of pity (Weiner et al., 1988). In other words, the same diseases resulted in different affective reactions based solely on the manipulation of controllability perceptions.

Theory for this phenomenon is offered by Guttman (2000), who discusses the issue of responsibility, or culpability, and points out that by making health a "value," which all PHCs tend to do, this leads to a separation of the healthy and the sick. Moreover, Guttman states that this can be further divided into the perceptions of the healthy, the responsible sick (those who had no control over their behavior or illness), and the irresponsible sick (those who made poor health or risky behavior choices). In this way, emphasizing responsibility in a PHC can create health as a metaphor; those who have it are worthy, and those who do not are unworthy

(Guttman, 2000). Essentially, perceptions of responsibility are an ethical dilemma because it ties health to a value with a moral dimension, and can, thus, lead to stigmatization of those perceived to be irresponsible. Other scholars have included this moral dimension into their conceptualizations of stigma, as well (e.g., Goffman, 1963). This project will include this moral dimension by considering "moral emotions" (Weiner, 1996) toward admonished groups. On a more general level, it is simply important to note the moral aspect of the judgment of others' behaviors and responsibility.

A primary component in Smith's (2007) stigma communication model is also *responsibility*. This component is concerned with the idea that those who are in a stigmatized group are responsible for their own condition, behavior, or outcome (Smith, 2007). Smith defines this concept further by explaining two dimensions of responsibility, choice and control. *Choice* refers to the belief that a person chose to do the behavior that is responsible for their own fate or he/she made poor choices that led to their condition. *Control* indicates the person's ongoing lack of effort to help oneself by continuing to engage in the behavior or refusing treatment, which is likely to result in a poor health outcome (Smith). Smith (2012) has since tested her stigma communication model and found that responsibility was correlated with affective message reactions of fear, anger, and disgust, as well as cognitions. Responsibility (as a message cue) had one of the most notable effects on predictions of stigma beliefs, discriminatory intervention support, and message dissemination.

Perceived responsibility measurement. Although an important contribution, Smith's work (2012; 2014) did not operationalize responsibility in a manner consistent with her conceptualization. Responsibility was used to convey fault for disease outcomes (rather than for the behavior). In earlier pieces, Smith (2007) carefully delineated between concepts of

behavioral initiation responsibility, fault for ongoing behavior, and blame for behavior-related outcomes, something she failed to operationalize in later studies. This means there is conceptual blurriness between different aspects of responsibility and how it has been operationalized. This project will attempt to parse out and clarify the overlap and blurriness between closely related, but conceptually distinct, concepts.

Other scholars have claimed important distinctions, but not clearly operationalized these distinctions, either. Weiner (2006), for example, studies social judgments of responsibility and attribution theory, and he examines responsibility as an important variable in the stigmatization of others. He differentiates between responsibility and causal controllability, although he admits to often using them interchangeably (Weiner, 2006). The "causal" portion of the definition refers to the initial cause of the behavior; to what is the initiation of the behavior attributed? This resembles Smith's (2007) dimension of responsibility associated with *choice*. Controllability, alternately, refers to the agent's *ability* to change the ongoing behavior. Weiner (2006) calls this dimension "controllability," and its definition is the similar to Smith's (2007) conceptualization of control.

Weiner's (2006) theory of social conduct names *causal controllability, responsibility, and blame* as central constructs. This researcher often uses the first two terms inconsistently, but Weiner does consistently categorize blame separately. According to this theory, a condition is evaluated by its cause and controllability; thus, the behavior is assessed to be, or not to be, the responsibility of the offending person. Blame for a person's outcome is then applied. These evaluations lead to affective responses toward the person with the behavior or condition, as well as other helping or discriminatory behavioral outcomes (Weiner, 2006; Weiner, Perry, & Magnusson, 1988), although the order or directionality is not well explored. Moreover, Weiner

and colleagues' studies (e.g., 1988) did not tease out the difference between onset and continued engagement in a behavior (in lieu of behaviors, conditions were employed for analysis).

The distinction between perceived behavioral responsibility and blame for behavior-related outcomes deserves more attention to create more consistency in literature terminology. In addition, although responsibility has been identified as a potential key construct in the process of stigmatization, the nuances between responsibility for initiation, ongoing behavior, and poor health outcomes have yet to be explored. Few empirical studies have investigated how media or campaign messages inadvertently create or reinforce stigma, and which dimensions of responsibility are of import in this process. Therefore, this study will operationalize two dimensions of perceived responsibility for behavior: choice/cause/attribution and control/controllability. Blame (perceptions that one deserves poor outcomes) will be analyzed as a separate variable; regardless of terminology, this concept has been tied to stigma and interpersonal helping, social distancing, and policy opinions.

For this study, it is likely that attribution (choice) and controllability (control) will be correlated, as both have to do with assigned responsibility for a behavior, the difference occurring in the assigned cause and assigned continuation. Additionally, attributions tap into perceptions of social versus biological influences of people's behavior, something that, as previously argued, many people do not consider thoroughly in their assessments of responsibility. If the determined attribution for initiation is assessed as a moral weakness, it is also likely that the continuation will be deemed as a lack of effort or character flaw. Thus,

H4: Attribution and controllability will be associated with one another.

With respect to the components of the EPPM and their link to responsibility, threat induces fear among those to whom a message applies, and many studies have confirmed this

function (see Witte & Allen, 2000). However, it is unclear whether threat is a construct that may lead to attributions of behavioral responsibility. Threat components remind people of the dangerousness of a behavior; this is likely to be connected to fear for primary audiences, as studies have shown, but whether it leads to perceptions of behavioral responsibility is unknown. For those who do not enact the message's admonished behavior, threat may conjure ideas about those who do engage in the behavior as being stupid or could even create anger or intolerance toward that group. However, little is known about whether threat, alone, would lead to perceptions of behavioral responsibility (attribution and controllability). However, considering attribution refers to the onset, whereas controllability refers to the continuation of a behavior, it is possible these variables have different mediating effects between message components and stigma. Thus,

> *RQ2: Do attribution or controllability mediate the relationship between threat messages and stigma among those who do not enact the admonished behavior?*

For the recommended response component of an EPPM message, there is potentially more reason to believe this message component could enhance perceptions of behavioral responsibility (operationalized as attribution and control). Self-efficacy messages are constructed to make people believe that behavior change is easy, and response-efficacy messages aim to persuade people that by enacting the recommended response, they will avoid the threat. It is the nature of this EPPM component to convince audiences that avoiding/stopping/changing the admonished behavior is an attainable goal. However, many people do not recognize the roles that factors such as environment play; for those who do not engage in the admonished behavior, the efficacious recommended response may serve to enhance the perception that others could change if they desired. By not doing so (because the message provides "easy" solutions), people who engage in

the admonished behavior must not want to change. In other words, efficacy messages may create the perception that people who engage in a particular dangerous behavior should possess control over their behavior, leading others to stigmatize them.

H5: Controllability will mediate the relationship between efficacy and stigma toward marginalized groups.

Although attributions are likely to be correlated with controllability, it is unclear whether attribution will also mediate the relationship between efficacy and stigma. Thus,

RQ3: Do attribution(s) mediate the relationship between efficacy and stigma?

One more distinct possibility is that responsibility for the behavior may be better represented as a combination of both attribution and controllability. This project will determine whether these concepts should be conceptualized and operationalized as individual contributing variables or as observed variables that comprise responsibility for behavior as a latent construct. To determine the best measure,

RQ4: Is perceived responsibility for behavior better represented as two distinct variables (attributional causes and controllability) with independent effects or as an interaction term between various attributions and controllability)?

Finally, stigma often includes or leads to a perception that if people become ill from a controllable behavior, they are blamed for any potential disease they may acquire. In laymen's terms: "they deserve their fate because they chose to do this dangerous thing." This is supported by stigma scholars, although some count blame as part of stigma (e.g., Smith, 2007), whereas others see it as an antecedent or outcome of stigma (e.g., Guttman, 2001; Weiner, 2006).

For this project, blame is conceptualized as an outcome of stigma. There are two important reasons for this distinction. First, although nuanced, there is a difference between

holding someone responsible for their initiation into a behavior, their continuation of a behavior, and whether they deserve the potential outcome of that behavior. These are being examined separately because many fear appeals are aimed at dangerous behaviors – not existing conditions – so the slight differences between behavior and outcome may matter. Second, blame for disease is often conceptualized as a part of stigmatization. However, if stigmatization is a cognitive and affective reaction to an individual or group who enact an admonished behavior (as I claim later), I posit that these assessments *lead* to the determination that the person(s) is to blame for their own outcomes. Although a minor difference, it is an important one for exploration of the process of stigmatization.

H6: Stigma will be positively associated with blame for a person's current or future negative outcome.

Research has established that stigma and blame result in lowered desire to help or support the stigmatized, whether interpersonally, socially, or politically. Therefore,

H7: Blame will be positively associated with discriminatory behaviors.

Finally, if all of these variables are associated, it is also likely that they should all individually account for some variance in a model to predict blame and discrimination (the two outcome variables beyond stigma). Therefore,

H8: Threat, efficacy, responsibility, and stigma will all predict blame.

H9: Threat, efficacy, responsibility, stigma, and blame will all predict discrimination.

Moderators

Although there are numerous potential moderators and control variables that could affect the results of this study, this project will only look at three: SES, ethnicity, and locus of control.

Locus of Control

Locus of control is one potential moderator (LOC; Rotter, 1966). LOC has yet to be considered for its potential to moderate the creation or reinforcement of stigma. Theoretically, people may project their worldview onto others; people with a high internal LOC may stigmatize to a greater degree due to a heightened perception that people control their own lives and consequences. In contrast, people with an external LOC may stigmatize less since they believe that most events, conditions, and consequences are outside of an individual's control. To my knowledge, no prior research has used LOC as a variable of interest in studying health stigma and the EPPM.

H10: LOC will moderate such that high internal LOC persons will perceive personal responsibility (attribution and control), stigma, blame, and discrimination to a greater degree than those who possess high external LOC.

Demographic Factors

Although collecting for demographic features is commonplace in most studies, the role demographics play in this project are of particular interest. Social power has been associated with stigma; those with greater power stigmatize lesser-powered groups (Link & Phelan, 2001). More specifically, education and income levels have both been correlated with an increased tendency to stigmatize others in health settings (Stuber, Galea, & Link, 2008). Particular ethnic groups have less power than the hegemonic group. Accordingly, this project will assess how SES affects stigmatization of others. Although some work has looked at stigma, race, and class differences, none has done so within the context of EPPM message effects. Thus,

RQ5: What differences in assessment exist between EPPM messages, personal responsibility (attribution and control), stigma, blame, and helping behaviors depending on ethnicity or SES?

Conclusion

Chapter 2 outlined rationales for each hypothesis and research question and tables and figures for visual referral are below. The following chapter will provide an overview of the methods, measures, and general findings of the preliminary study for this project.

Tables and Figures

Table 1

Summary of Hypotheses and Research Questions

Hypotheses/Research Question	**Variables**
H1: Messages high in threat will be positively associated with stigmatization of those who enact the threatening behavior.	Covariates: age, education, income IV's/DV's: Threat, Stigma
H2: Messages that include efficacy will be positively associated with stigmatization of those who enact the admonished behavior.	Covariates: age, education, income IV's/DV's: Efficacy, Stigma
H3: Stigma will be positively correlated with discriminatory behaviors among those who do not enact the stigmatized behavior.	Covariates: age, education, income IV's/DV's: Stigma, Discrimination
H4: Attribution and controllability will be associated with one another.	Controllability and attribution (each of the four)
RQ2: Do attribution or controllability mediate the relationship between threat messages and stigma among those who do not enact the admonished behavior?	Perceived threat, stigma, controllability, attribution
H5: Controllability will mediate the relationship between efficacy and stigma toward marginalized groups.	Perceived efficacy, stigma, controllability
RQ3: Do attribution(s) mediate the relationship between efficacy and stigma?	Perceived efficacy, stigma, attribution

Table 1, cont.

Hypotheses/Research Question	**Variables**
RQ4: Is perceived responsibility for behavior better represented as two distinct variables (attributional causes and controllability) with independent effects or as an interaction term between various attributions and controllability)?	Covariates: age, education, income IV's/DV's: controllability, attribution, stigma, negative emotions, stereotypical thoughts, blame, discrimination
H6: Stigma will be positively associated with blame for a person's current or future negative outcome.	Covariates: age, education, income IV's/DV's: Stigma, Blame
H7: Blame will be positively associated with discriminatory behaviors.	Covariates: age, education, income IV's/DV's: Blame, Discrimination
RQ1: Is stigma adequately measured with the validated scale or does adding stereotypical cognitions and emotions add additional variance?	Covariates: age, education, income; IVs/DVs: Stigma, negative emotions, stereotypical thoughts; blame, discrimination
H8: Threat, efficacy, responsibility, and stigma will all predict blame.	Covariates: age, education, income; IVs/DVs: threat, stigma, controllability, attributions, negative emotions, stereotypical thoughts; blame
H9: Threat, efficacy, responsibility, stigma, and blame will all predict discrimination.	Covariates: age, education, income; IVs/DVs: threat, stigma, controllability, attributions, negative emotions, stereotypical thoughts; blame, discrimination
H10: High internal LOC persons will perceive personal responsibility (attribution and control), stigma, blame, and discrimination to a greater degree than those who possess high external LOC.	IV: LOC DVs: attribution, controllability, stigma, negative emotions, stereotypical thoughts, blame, discrimination
RQ5: What differences in assessment exist between threat and efficacy perceptions, personal responsibility (attribution and control), stigma, blame, and discrimination depending on ethnicity, education, or income?	IVs: ethnicity, education, income DVs: Threat, efficacy, attribution, controllability, stigma, negative emotions, stereotypical thoughts, blame, discrimination

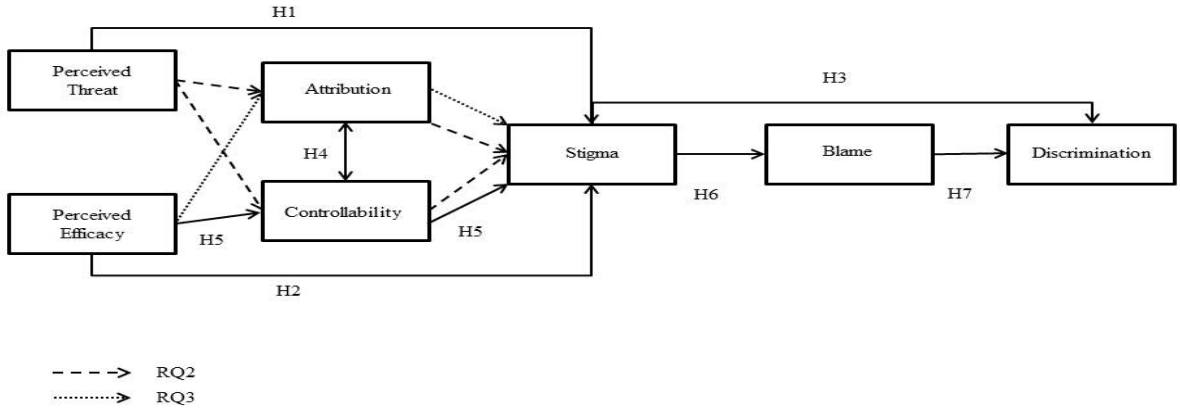

Figure 1. Framework of conceptual model including attribution and controllability as separate factors.

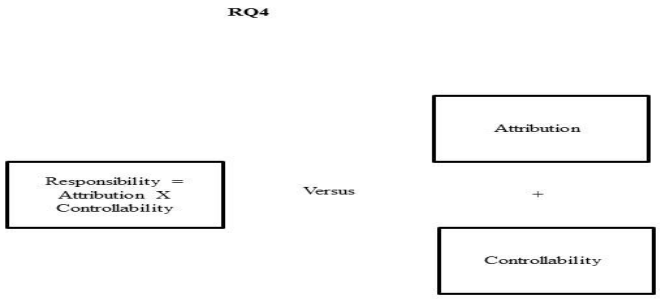

Figure 2. Visual representation of research question four.

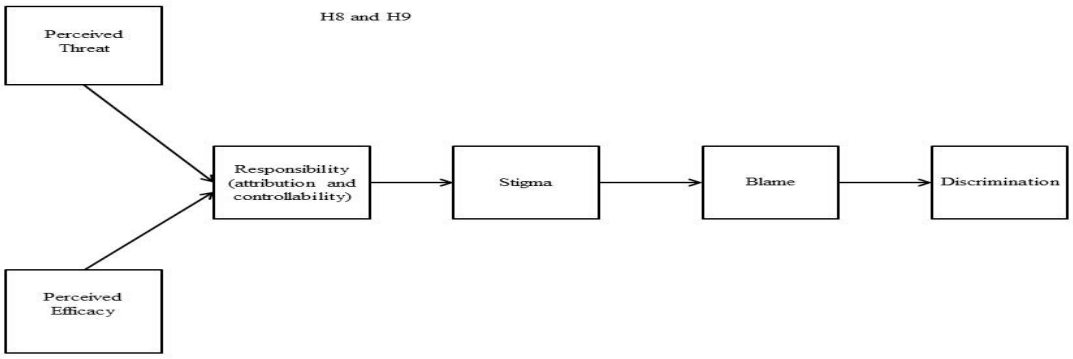

Figure 3. Framework of conceptual model with attribution and controllability as one construct (responsibility).

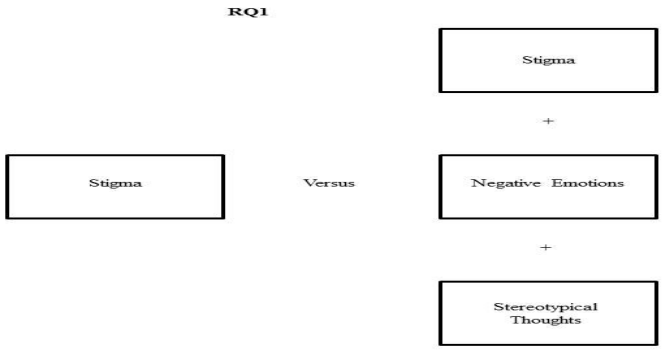

Figure 4. Visual representation of research question one.

Chapter Three: Methods and Results for Preliminary Studies

Chapter Overview

Chapter Three of this dissertation addresses the methods and procedures for collecting the preliminary data for this study. All data collection for this project was conducted using Amazon's MTurk. There were four goals of the pretest. First, pilot tests were conducted to assure that the experimental messages were perceived accurately by participants for manipulation purposes. Second, an open-ended survey was utilized to collect participants' stereotypes regarding people who smoke or use an electronic cigarette. Third, these responses were compiled and coded using thematic analysis and content analytic processes to compare to existing stereotype measures and to adapt these measures according to those comparisons. Fourth, the pretest provided opportunity to test the newly developed discrimination measure for validity and reliability before the main study.

The main study, which will be explicated in the next chapter, used the measures and messages based on the pretest results and included all additional variables of interest. Both the pretest and the main study adhered to the scientific method, and all efforts were taken to make both as rigorous as possible. This chapter will address the four goals outlined above in the preliminary data collection. The main study procedures and methods will be discussed in Chapter Four.

Preliminary Recruiting and Sampling

Using Amazon's MTurk.

There are several reasons that chose to use MTurk instead of employing traditional recruitment methods. First, I wanted to obtain a public sample; that is, I wanted to avoid college-student recruitment. Although there is nothing wrong with college student sampling, especially

when the sample is appropriate to the project, I wanted to collect a more representative sample of the public, with wider ranges of age, income, and education.

Studies have shown that samples collected from MTurk are not statistically different in their results from samples recruited through traditional face-to-face methods (Casler, Bickler, & Hackett, 2013). To further investigate differences in social media users, traditional recruits and MTurk respondents, Casler, Bickler, and Hackett (2013) recruited small samples with each method. They found that the demographics of the sample were more diverse through MTurk, in a positive direction for researchers. Income was significantly lower than social media recruits (college student recruits were not asked this question), racial diversity was greater than both social media and face-to-face college recruits, and average age was significantly higher than both social media and college student samples (Casler, Bickler, & Hackett, 2013). Overall, MTurk samples potentially allow for a broader range of age, ethnicity, education levels, jobs, and health statuses than a college sample alone.

The second reason is ease of access. Obtaining a general population sample face-to-face presents a lot more challenges and requirements. Getting permission and permits to collect in the street, flyer cars to solicit participation, or set up at other public venues (e.g., grocery stores, pharmacies, restaurants, and malls) are difficult to attain and often take a lot of time and persuasion. MTurk does not require that I attain permission from multiple locations to reach a general and diverse audience.

Third, most people who are at stores or passing on the street are in transit; that is, they are going to or away from a location. For example, it becomes a difficult "sell" to get a person who is running into the grocery store for a quick item or a family going shopping in a store with the kids to stop long enough to participate in a 15-minute project. On the other hand, MTurk

participants choose to complete tasks, often as part of their daily routine to make money. According to a 2010 study, 14% of MTurk participants report these tasks as their primary income, and 61% report the money as important supplemental income that motivates them to participate (Paolacci, Chandler, & Ipeirotis). Although I was not able to find more current numbers, the popularity of MTurk continues to grow (Casler, Bickler, & Hackett, 2013; Holden, Dennie, & Hicks, 2013).

As an additional consideration, MTurk participants are willing to complete survey or experimental tasks for a much lower incentive on average (e.g., $0.50 - $0.75 is a high payment for MTurk participants, depending on the length of the survey), compared to an average of $5 for other recruitment samples (Casler, Bickler, & Hackett). As a PhD student with a limited budget, this allows for the recruitment of more participants for less money.

Speed of data collection is another reason I chose MTurk. As a "requester," I had access to all of the survey and experimental tools MTurk offers, and focused on the design and set-up of my study (Holden, Dennie, & Hicks, 2013). From there, I capped the number of people that I needed for each condition at each phase, and set participation criteria, thus ending the survey when the set number of participants was reached. I could also determine the number of days I wanted to keep the task open (Holden, Dennie, & Hicks). Considering that MTurk currently has over 500,000 active participants (Amazon mechanical turk, 2015), and that my design required a very large number of respondents, it was likely that I would collect more data than if I had "pounded the pavement," looking for participants. MTurk users could complete my study task simultaneously and did not require my oversight as face-to-face collection would.

Although some researchers are hesitant to use online data collection, overall, results from various tests comparing results from MTurk samples to traditional samples have largely been

positive (e.g., Cassel, Bickler, & Hackett; Eriksson & Simpson, 2010; Horton, Rand, & Zeckhauser, 2011; Mason & Suri, 2012; Suri & Watts, 2011). In general, Casler and colleagues state, that the "conclusion seems to be that with sensible safeguards and manipulation checks in place, online participation is no greater a concern to data integrity than the other biases and demand the same characteristics against which researchers guard in more standard methods of data collection" (p. 2156).

Of course, as with any project, there are some considerations to ensure quality data, such as design quality, which is up to the researcher, and verifying that participants are attentive to the survey. Some scholars such as Oppenheimer, Meyvis, and Davidenko (2009) suggest instructional manipulation checks; these checks periodically ask participants brief questions about a stimulus or page that they have just viewed to validate participant engagement. I implemented as many safeguards as possible throughout all of my data collections that would ensure the best quality data possible. These methods are detailed throughout the remainder of the methods chapter and were implemented in each of the three phases of the study.

Preliminary Message Creation

This experiment posits that people may be primed to stigmatize, stereotype, or discriminate against people who engage in an admonished behavior after exposure to an EPPM-framed fear appeal about the particular behavior. As such, the first step was to create EPPM-framed messages about smoking and vaping. I chose a "flyer/brochure" style message for a realistic representation of hand-outs, flyers, or brochures one may see in public. Further, using a written message (vs. video or audio) allows for maximum manipulation and control of each variable and is easy to present in an online context. The following section discusses the original design of each condition and behavior's stimuli for preliminary induction checks. All

preliminary stimuli messages are included for viewing in the Appendices of this manuscript.

Message Development

Successfully manipulating variables of the EPPM is a difficult task; thus, I used the same approach with which I have had prior success (Quick, LaVoie, Tylus-Reynolds, & Martinez, 2016). First, using Word's "flyer" layout to design the messages, I originally created ten manipulations of the message (2 (high/low efficacy X 2 (high/low threat) X 2 (smoking/vaping)), and each of the two health behaviors had one control (containing no threat or efficacy regarding the behavior). Color, font type/size, image, and wording were all manipulated based on the condition, while keeping all conditions as similar in length and design as possible.

Two of the EPPM's primary tenets are that audiences must perceive a severe threat and substantial efficacy for the fear appeal to succeed in changing attitudes and behaviors via the creation of fear (Witte & Allen, 2000; Witte, 1992; 1994). Although successfully arousing fear in target audiences is not of interest to this project, it is important to design the EPPM-framed messages carefully; the principal claim of this dissertation is that these messages may induce or increase the stereotyping and stigmatizing of, and the discrimination against, people who engage in the message-admonished behavior *due to the threat and efficacy components* the EPPM requires. Thus, to investigate this inquiry, the EPPM-framed fear appeals must successfully manipulate the threat and efficacy components of each topic's stimuli.

Topics. In choosing the health topics used for stimuli materials, a list of criteria was determined based on previous literature and this study's design. The health topics had to be: regarding a behavior (not an illness or outcome of a behavior); a behavior in which there are plenty of people who have and have not participated; a behavior that has a realistic chance of resulting in actual differences in behavioral outcomes; a behavior that has a reasonable chance of

increasing associated stigma after stimuli exposure; a behavior within the realm of health communication, broadly defined; a behavior solely focused on self-harm (i.e., nothing that involves a message about harming others). Based on these criteria, I have chosen two health topics around which to focus my project: smoking and vaping. All three were used in a smaller pilot study, and the two behaviors that showed the most promise were used in the main study.

*Smoking***.** Smoking is increasingly a stigmatized behavior. "Denormalizing" smoking has been a primary strategy in the global effort to reduce this unhealthy behavior (Bell, Salmon, Bowers, Bell, & McCullough, 2010). However, this denormalization, in conjunction with tobacco control policies, has also led to the increased stigmatization of the smoking identity (Bell et al., 2010).

Smoking tobacco has been chosen as a stimulus because much of the negativity toward this behavior has been attributed to personal responsibility. Although smoking used to be common, the decrease in smokers and public policies enacted against it have also implied and reinforced the role of personal responsibility for the behavior. For example, according to Weiner (1995), attribution theory states that people look for a reason that others violate social norms. If this norm violation is perceived to be outside of the control of the judged, then social reactions tend to include helping behaviors, pity, and support (Corrigan, 2000; Weiner, 1993, 2006). However, if the individual's own choice or lack of responsibility is deemed to be the cause of the norm violation, anger, blame, and stigma are more typical responses (Stuber, Galea, & Link, 2006; Weiner, 1993, 2006).

Regarding smoking behaviors, tobacco use has largely been seen as a socially learned habit that is a personal choice (Stuber, Galea, & Link, 2006). Although research is beginning to show the role genetics play in the use of and addiction to tobacco, most people still believe it to

be a behavior of personal responsibility. For example, Stuber and colleagues (2006) found that study participants were most likely to attribute smoking to weak character rather than genetics or stress; further, although all three reasons were linked to stigma, weak character was the most negatively judged attribute (Stuber, Galea, & Link). Overall, smoking is employed as a stimulus topic in this study because of its strong association with the perception of high personal responsibility for the behavior. Additionally, the threats of smoking can be minor (e.g., smell, yellow nails) or severe (lung cancer, emphysema), so the topic lends itself well to manipulating the amount of threat emphasized.

*Vaping***.** In addition to a health issue with established links to societal perceptions of personal responsibility and increasingly attached stigma, this project also has a condition that, although it resembles combustible smoking, is fairly new and not yet well understood. I chose this behavior because it is parallel to smoking but is novel and may not have preconceived stigma or ideas of responsibility attached to it yet.

Vaping is a term for the use of electronic cigarettes (e-cigs), which are devices that heat liquid into vapor, which users inhale. Vaping is rapidly increasing in popularity, and the liquids come in a large variety of flavors and levels of nicotine (including no nicotine). Little is yet known about long-term health consequences for "vapers" (people who engage in vaping) or those exposed to the second-hand vapor. Although scientists have researched this behavior for over five years, few results have been clear, and many studies contradict one another (e.g., Burstyn, 2014; Dawkins, Turner, Roberts, & Soar, 2013; Geiss, Bianchi, Barahona, Barrero-Moreno, 2015; Jensen, Luo, Pankow, Strongin, & Peyton, 2015; Pisinger & Dossing, 2014; Polosa, 2015; Ramo, Young-Wolff, & Prochaska, 2015).

What is noteworthy, however, is although science is still determining the relative safety of these products and weighing their usefulness in smoking cessation, the public is highly aware of e-cigs, but perceptions of safety are declining (Tan & Bigman, 2014). Further, there has been much media coverage about vaping (Yates et al., 2015). Considering that media often sets the agenda for what citizens should consider important (McCombs & Shaw, 1972), as well as determines the frame through which audiences perceive issues (Scheufele, 1999), media reported studies on these devices may mislead, confuse, or skew the population's perceptions of e-cigs and of those who vape, especially when a report suggests vaping is dangerous (Nocera, 2015). Altogether, the American public is still deciding how they feel about this new behavior and those who perform it.

Vaping also fits nicely into this project because of the laws and rules under consideration for e-cigs. Originally, e-cigs were advertised as devices you could use anywhere, even where smoking bans were in place. But smoking bans are increasingly including the use of e-cigs, although no scientific research has yet discovered conclusive and non-biased evidence against the behavior. This means the public eye is also watching public policy to determine whether this behavior is acceptable or not. There is still a lot of confusion as to how to govern vaping (Cressey, 2015).

Overall, mixed evidence and uncertainty about this behavior lends itself well to manipulation, since it is unclear whether responsibility or stigma has yet been attached. Some deception was used in the threat condition (since there is no clear or definitive evidence of threat), but participants will be debriefed immediately following the study). The recommended response condition, on the other hand, was the exact same messages received by the smoking

group, providing a clean parallel in conditions with the difference between the current level of attached negativity and stigma toward the behaviors smoking or vaping.

High threat conditions. All high threat conditions contained both susceptibility and severity embedded in the messages. For high threat conditions, the background was red. As Wauters, Brengman, and Mahama (2014) state, "…altering background colors of messages or using different font colors is easy and practically costless, and can thus be an easy way to increase the effectiveness of threat campaigns." Color has been studied for its effect on emotions, such as fear and calmness, and other psychological factors (Elliot & Maier, 2007; 2014). The color red was chosen based on our societal association of red with danger and high arousal (Elliot & Maier, 2007; 2014). At the top of the flyer was a black box with white capital letters to draw attention. This text, for high threat conditions, stated, "SMOKING KILLS" and "VAPING CAN KILL." The subtle difference in wording stems from the wide-spread knowledge that smoking does, indeed, kill, whereas research on vaping has not established this at all. Although I used fake information in the vaping condition (little research has found any significant health threat), I chose not to use the statement "VAPING KILLS," for concern that participants may have seen that claim as outrageous and, thus, been less apt to believe the remainder of the message.

Below the black area with the white opening statements was an image for each behavior. Images influence emotions and perceptions of all kinds of messages regarding almost any topic. Threatening or graphic images causes increases in psychological responses, such as reactance, which includes both affective and cognitive factors (Quick, LaVoie, Reynolds-Tylus, & Martinez, in press). Based on extant research, images for each condition in this study was

carefully considered, and each will be discussed during its associated condition (threat/efficacy and smoking/vaping). For high threat smoking messages, the stimuli image depicts a smoking revolver with cigarettes in the chamber as opposed to bullets. For vaping, the high threat image shows the dark silhouette of a man's profile, holding an electronic cigarette, and blowing out a large cloud of "smoke."

The remainder of the flyer is red, and below the image, a brief introductory statement appears in black. For high threat smoking conditions, the text reads "There are still 20% of Americans who smoke cigarettes on a regular basis. If you're one of them, here's what you should know:" (twenty-three words). For high threat vaping conditions, the text says "The use of electronic cigarettes (e-cigs) is on the rise. Vaping (using an electronic cigarette) could be harmful. Here's what you should know:" (twenty-three words). Beneath the introductory statements, the direct manipulation of threat (and below that, efficacy) appears as bullet points. In white capital lettering, the smoking condition says "SMOKING CAUSES," and directly under this phrase are five points (in black lettering): "Lung cancer, Heart disease, Amputations, Emphysema, Death." Using the same font, coloring, and format, the vaping flyer says "VAPING CAUSES," followed by the same five outcomes, "Lung cancer, Heart Disease, Amputations, Emphysema, Death." All high threat conditions used the same colors, fonts, and threat messages, regardless of whether a high or low efficacy message was also present; only the images and topical orientation messages differed between the two behaviors across high threat messages.

Low threat conditions. All low threat conditions minimized the susceptibility and severity in the message. Low threat conditions had light blue backgrounds. Research has established that blues have a calming effect, and are often utilized in messages and environments

to ease anxiety and increase psychological and emotional tranquility (Elliot & Maier, 2007; 2014; Wauters, Brengman, & Mahama, 2014). All reasonable efforts were taken to create low threat messages that were visually and textually similar to high threat conditions, changing only the language in order to deemphasize the severity of the threat. Like the high threat conditions, there was a black box with white capital letters to draw attention at the top of the flyer. The statements were "AVOID SMOKING" and "VAPING COULD BE HARMFUL." The images below the opening statement were changed to seem less menacing; the smoking image depicts simply a hand holding a cigarette, and the vaping picture shows a picture of an electronic cigarette that is not in use.

Below the images, the remainder of the flyer is light blue, and the topic orientation messages are identical to the high threat condition (twenty-three words each). Underneath the topical acclimation message, the low threat conditions also have white capitalized text, but it was adjusted to be less frightening by adding "conditional" words. Smoking reads "SMOKING MAY CAUSE:" and vaping states "VAPING COULD CAUSE." The words "may" and "could" were added to reduce susceptibility. The bullets following these phrases list possible health problems, but the threats are far less severe. Smoking lists the following four outcomes: "Smelly clothes, A persistent cough, Yellowed teeth or nails, Asthma." Vaping lists the following: "Coughing, Mild burns (if used incorrectly), Reduced taste sensitivity."

The less threatening health outcomes for smoking and vaping are, unlike the high threat conditions, not the same. This was a conscious and strategic choice; slightly reducing internal validity was a trade-off for increasing message believability. Because electronic cigarettes do not produce or expel true smoke, they are unlikely to cause the same cosmetic problems associated with tobacco smoke (e.g., yellowed teeth and nails or smelly clothes). This feature of electronic

cigarettes (the lack of real tobacco smoke) has been prominently and pervasively advertised and discussed in the public sphere, so participants may not have believed that vaping could cause the same cosmetic consequences as smoking. However, the threat of coughing was the consistent across low threat conditions for both smoking and vaping. Although two of the threats were altered, this was to ensure participants would see the messages as believable and credible.

High efficacy conditions. The color, attention getting white block messages, and threat messages all dictated the color (red or blue) and image (scary or not) regardless of efficacy condition. The orientation messages below the image were the same as in high threat conditions. The efficacy conditions were manipulated by text only in the lower half of the flyer.

Beneath the bulleted health threats (whether high or low) was another phrase in white capitalized letters. For high efficacy, the text read, "YOU CAN EASILY PROTECT YOURSELF BY:" for both smoking and vaping. Below this statement in black bulleted text, the smoking conditions listed: "Setting a quit date, Finding social support, Trying different nicotine replacement products," and "It's a process, but call us today for assistance 1-800-TRY2QUIT.

Low efficacy conditions. For low efficacy conditions, the text beneath the bulleted health threats was created to make the recommended response seem more difficult or vague, leading to less feelings of self-confidence in carrying out the recommendations. The white capitalized text read, "PROTECT YOURSELF BY." This is in contrast to the high efficacy condition which included the words "you can" and "easily." Beneath this statement, bullet points in black text for recommended actions were listed. For smoking these were: "QUIT TODAY!, JUST STOP!, and CALL 1-800-QUITNOW." Although both high and low efficacy messages included a helpline to call, the phone numbers were also manipulated to relay high or low efficacy (1-800-TRY2QUIT versus 1-800-QUITNOW). Taking small steps or "trying" seems

less overwhelming than being told to simply quit, which is why low efficacy conditions for smoking were worded in this manner. In the same vein, low efficacy messages for vaping included, "Never using an e-cig, Stop vaping now, Find a different smoking aid, Do not vape for any reason."

Procedure

Manipulation Check and Pilot Test Procedures

The following sections explain 1) my set-up of the surveys via MTurk, and 2) the respondent procedure for participating in the manipulation checks and pilot test of the discrimination measure.

Survey design and execution. Each individual condition was given a unique code for identification. High threat and efficacy were each assigned a "1," low threat and efficacy were each assigned a "0," and the stimuli were each assigned a representative number (smoking = "1," vaping = "2"). This system was used to assign numbers to each condition in the following order: threat, efficacy, behavior. Thus, each of the ten conditions uploaded to MTurk for manipulation checks were labeled and identified with a unique three-digit number. A capital "P" was added at the beginning of the code to be able to later differentiate "preliminary" testing from the main study. For example, for manipulation checks, high threat/high efficacy smoking was P111, low threat/high efficacy vaping was P012, and low threat/low efficacy smoking was P001. Controls were labeled with the letter "C" followed by the behavior number; C1 was the smoking control, whereas C2 was the vaping control condition.

I set up the codes in the aforementioned way so that I could easily track condition responses, but participants were unlikely to determine what the alphanumeric codes represented. MTurk workers searching for research or surveys saw the title of a survey followed by a number.

All titles were the same with the exception of the identifying alphanumeric code. For instance, if a worker clicked on "Health, Policy, and Public Opinion P002," they were taken to the vaping stimuli with low threat/low efficacy and the associated manipulation check questions; if a worker clicked on "Health Policy and Public Opinion C1," they were directed to the smoking control condition (no threat or efficacy = no message).

In addition, I added other stipulations to the manipulation check preliminary surveys. Workers were paid $0.10 to complete the study, which took between two and six minutes on average. I set up MTurk to pay participants within one week of completion. To signify completion, the last page of the study had a "secret code" for payment (N4R8L5), and workers would type that code into the completion box on MTurk for completion and payment credit. I gave workers a maximum of fifteen minutes to take the survey; participants who took less than one minute (default for MTurk) or more than fifteen minutes to take their survey were reverse rejected by MTurk (reverse rejection means denying payment after the completion of a survey unless the researcher overrides and approves the rejection). Reverse rejections are also automated if a worker puts in the incorrect secret code in the completion box.

To avoid the issue of workers taking more than one survey condition and maintain experimental integrity, I created a stipulation that assessed user IP addresses; MTurk's Turk Prime (a specific set of tools within the MTurk platform) disallowed people to take more than one of the ten conditional manipulation check surveys by denying access to a survey if the worker's IP address matched an IP address from the completion of one of the other nine conditions.

I requested, and set the limit, at one hundred fifty participants for each condition's survey, so once the limit was reached, MTurk automatically closed the HIT. I also used a process

called “micro-batching,” which was a solution to backlash after MTurk doubled their fees for researchers. MTurk originally charged 20% of your total payments to workers for completing HITS; however, this was increased in January, 2015 to 40% (D’onfro, 2015). TurkPrime, thus, developed a tool for reducing the researcher cost back to 20%. The tradeoff is the speed with which one can collect data. Traditional MTurk will send out all of one’s surveys at once when used without micro-batching. In other words, all 1,500 surveys (150 individual surveys across ten conditions) would be available to take as soon as the researcher “launched” them. When research is conducted this way, MTurk charges a fee of 40% of the total payments to workers, but the data can be collected as soon as the requested number of surveys is complete. This is usually a quick process, but the fee increase was problematic for non- or low-funded researchers and smaller companies. TurkPrime, thus, offers a tool called micro-batching. If one chooses this option, the surveys for any one task (condition) are sent out only nine at a time (ten or more at a time costs the full 40%). As soon as nine surveys are collected, the MTurk system automatically releases another nine to workers. This process technically keeps a researcher from putting out more than nine surveys at a time and, therefore, only costs the researcher the 20% fee (vs. 40%). However, this method can reduce the speed of data collection, when compared to releasing all surveys at once, because only after each set of nine surveys is complete can another nine surveys be launched. For this project’s preliminary manipulation check, for example, each condition (of a total of ten conditions) had to collect 9 responses (of the 150 total participant goal) before it could launch anymore; MTurk had to release each condition’s associated message and survey over sixteen individual times to collect each condition’s 150 desired responses.

To access the survey, participants had to read and electronically sign informed consent. I used skip logic for the informed consent procedure. That is, I manually set up a process that

would either 1) start the survey if the worker read and signed the informed consent agreement, or 2) redirect a worker to a page with a customized message explaining they were ineligible for the study if they did not sign informant consent. For both the preliminary and main study data collection, the informed consent letters were intentionally vague, stating "we are interested in your opinions on some current topics and issues." I made the decision to withhold specific information up front so as not to potentially "prime" any workers. Because this was an experiment based on immediate reactions to a stimuli message on a health topic, I did not want to mention the health topic or potential reactions in the letter because this may have led to thinking about the topic before being exposed to the stimuli.

Participant procedure. Along with the name of the study, participants saw the description, link, and summary of payment and expected time for completion. This was the information they used to determine whether they initially wanted to participate in the study. The description simply stated, "This study asks your opinions about a current public health topic." After choosing to participate by clicking on the link, MTurk workers were taken to a landing page that presented the informed consent letter. The letter was intentionally vague with respect to the topic or task to avoid priming effects prior to message exposure. Although not specific as to the topic or nature of the questions, the Institutional Review Board approved this procedure based on the experimental nature of this dissertation. The full letter of informed consent is in the Appendices of this manuscript. Following the letter, participants saw the following statement: "Please indicate that you are at least 18 years old and agree to participate by choosing one of the following:" Workers then chose one of two options: "I agree to participate in this study and have read the informed consent," or "I do not wish to participate in this study." Respondents who chose the former were then directed to the first page of the survey, whereas respondents who

chose the latter were directed to a separate message thanking them for their time and explaining that without informed consent they could not participate in the study.

For workers who chose to participate, the first page of the survey showed them one of the eight stimuli messages for test conditions. Participants who were in the control conditions skipped this step, as the controls were defined as no message (no threat and no efficacy at all). For test conditions, the page displayed the message along with the following instructions: "Please take the time to read and look at the following flyer. Consider all aspects of the flyer and its content. **Please take the time to carefully look at and read the entire flyer."** These instructions were included to ensure that workers gave adequate attention to the stimuli, as opposed to glancing at it and moving on to the next page. This is an important factor in determining whether message recipients do, in fact, differentiate between test messages or whether differences or similarities are due to a lack of attention to the message.

Following message exposure (for test conditions), workers assessed two dimensions of threat (severity and susceptibility) and two dimensions of efficacy (self- and response-efficacy), totaling twelve questions (the specific measures will be discussed in the next section of this chapter). This was the first step for control conditions. After these measures were complete, participants were directed to a page that asked them the following open-ended question:

> Please take some time to provide answers for the following. You do not need to fill out all ten thoughts, but please list as many as you can think of. **Thinking about the flyer you saw and smoking/vaping, please LIST AS MANY STEREOTYPES ABOUT PEOPLE WHO HAVE SMOKE/VAPE AS YOU CAN THINK OF. Try to spend BETWEEN 30 SECONDS AND 60 SECONDS ON THIS ACTIVITY.**

(The control conditions saw the same message, but it started with "Thinking about smoking/vaping..." so there was no reference to a message or flyer.) Below this prompt were ten blank spaces labeled Stereotype 1 – 10. This exercise was not included for the manipulation

check; rather, it was to assess a second qualitative preliminary test regarding stereotyping, which will be discussed in detail later in this chapter.

Upon completion of this task, participants moved to the next page, which consisted of a new measure testing dimensions of discrimination (the order of the measures was chosen to be consistent with the plan for the main study). The last page thanked them for their time and debriefed them on the "fake" health threats associated with vaping, as applicable. This page also provided the workers with the "secret" code for completion, which workers either copy/pasted or noted and entered where prompted by MTurk. This code ensured completion and served as proof for worker payment through MTurk and Turk Prime.

Measures

The following section outlines the measures that were utilized for the manipulation checks of the message conditions. The preliminary tests also provided opportunity to check reliabilities for modified measures. All manipulation check measures are viewable in full in the Appendices of this manuscript.

Perceived threat to smokers/vapers. To assess threat, I used Witte, Cameron, McKeon, and Berkowitz's (1996) Risk Behavior Diagnostic (RBD) scale for susceptibility and severity. Each sub-component consists of three questions and is a Likert type scale ranging from 1 = *strongly disagree* to 7 = *strongly disagree*. Previous reliabilities on RBD subscales have been good (e.g., Gore & Bracken, 2005, severity $\alpha = .88$, susceptibility $\alpha = .91$; Witte et al., 1996, threat $\alpha = .71$).

The original questions were slightly modified in language. Because I am interested in both primary audience responses (those who enact the behavior) and secondary audience responses (those who do not enact the behavior), these questions must be adapted to determine

threat, regardless of whether each participant engages in the health behavior. Therefore, for susceptibility, instead of stating, for example, "It is possible that I will get lung cancer," the item said "it is possible that people who smoke will get lung cancer." Phrasing the question this way does not measure personal risk perception; however, this study is designed to trigger general susceptibility perceptions about groups of people. This covers both those who smoke or vape (primary audiences), as well as those who do not (secondary audiences). It is likely that secondary message recipients still consider the susceptibility of those who engage in primary audience behaviors, and if message component manipulations include susceptibility. Therefore, wording the questions in this way accounts for both target and non-target audiences. The severity questions were also modified in a similar manner (e.g., Smoking is a severe threat vs. Smoking is a severe threat to those who do it).

Perceived smoker/vaper efficacy. Perceived efficacy was determined based on self- and response-efficacy scores from measures from the RBD (Witte et al., 1996). Self-efficacy consisted of three items, modified to make sense to both primary and secondary audiences. For example, instead of "I can quit smoking," the item stated, "Smokers can quit smoking." Response efficacy, as well, was assessed using three items from the RBD, each modified to be appropriate for target and secondary audiences. For example, instead of an item stating, "Quitting smoking will keep me from getting lung cancer," the statement read, "Quitting smoking will keep smokers from getting lung cancer." All six perceived efficacy items used the same Likert-type scale (1 – 7) as with susceptibility and severity. Perceived efficacy has also shown good reliabilities in previous studies (e.g., Gore & Bracken, 2005, response efficacy α = .92, self-efficacy α = .96; Witte et al.,1996, perceived efficacy α = .73).

Discrimination. In addition to checking the messages for successful manipulation and the EPPM-related measures for reliability after modification, this pretest also allowed for the examination of the validity of newly developed discrimination scale and subscales. All items for this scale are available in the Appendices.

Action-oriented outcome behaviors for this study were conceptualized as discriminatory behaviors. As stated in my preliminary examinations and prospectus, I did not find the type of measure I wanted for this scale. Thus, I created a scale to measure discriminatory behaviors on three dimensions: interpersonal, social, and political/public policy. I included an interpersonal dimension because stigma is associated with interpersonal isolation (e.g., Goffman, 1963; Meisenbach, 2010). For this subscale, interpersonal behaviors consisted of acts like approaching, talking to or befriending someone who enacts the risky behavior. The social dimension subscale was included in this measure because it is the community at large that assigns stigma (e.g., Smith, 2007), and those who are stigmatized internalize social disapproval (e.g., Corrigan, Kuwabara, O'Shaughnessy, 2009; Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Goffman, 1963; Meisenbach, 2010, Smith, 2007). Social dimension questions involved situations such as introducing someone who enacts an admonished behavior to groups of friends, going out together with that person, and wedding him/her. Rozin and Singh (1999) have several validated questions from which drew from for this dimension.

Questions involving policy were included because of the power differential between those who are "normal" and those who are marginalized (Fiske, 1998). Some scholars argue particular policies support or enact discrimination against, or cause further disparities between, groups (e.g., Stuber, Galea, & Link, 2008). Political questions involved agreement with supportive interventions or potentially discriminatory policies, such as job acceptance/denial,

bans, taxes, insurance premiums, funding for educational programs, and receiving public monetary support such as welfare or food stamps (some questions were reverse coded). After the pretest, factor analyses were run to determine whether these factors clustered together and, further, whether these dimensions loaded as one scale with three subscales. The analysis and results of this portion of the preliminary testing will be discussed later in this chapter.

Stereotype Endorsement Measure Exploration

Analysis and Results of Qualitative Data

The preliminary tests provided an opportunity to explore people's specific stereotypes about people who smoke or vape. A stereotype endorsement scale for smokers is already established in the literature. However, this scale was used for adolescents and, thus, I wanted to determine whether the scale would be representative with a larger less homogenous group. Therefore, during the pretest, I included an open-ended question, to gather reported stereotypes from my sample, and then I used content and thematic analytic procedures to explore the data. Ultimately, I wanted to determine whether the existing scale reflected the broader population's stereotypes, whether the scale needed to be adapted, and whether the scale could be used in my main study.

For this preliminary exploration, there were a total of 314 participants (N = 314), who collectively reported 1,699 individual stereotypes or stereotypical thoughts via an open-ended question with 10 text boxes for responses:

> *Please list as many stereotypes about people who smoke as you can think of. You do not have to provide 10 stereotypes, but list as many as you can. Try to spend 60 seconds or less on this activity.*

The data was exported to an Excel spreadsheet and combined into one column (originally it is exported as 10 separate columns, 1 for each text box). I sorted the column alphabetically for

both cleaning and analytical purposes. I then went through and eliminated extraneous words (e.g., "people who smoke are selfish" became "selfish," "I think they are weak-willed" became "weak-willed," etc.). Thoughts that required extra words or entire phrases for context or meaning were not changed (e.g., "use other drugs," "want others to think they're cool," etc.).

I resorted the data again alphabetically so that many words that were repeated would appear in succession (e.g., all "dumb" would appear consecutively, all "trashy" would appear consecutively, etc.).

For the purposes of this project, I have defined stigma as a combination of *negative* stereotypes and negative affect. While *all stereotypes are negative in that they exist,* my interest here is in stereotypes that assign a negative attribute, characteristic, evaluation, or identity. To further clean the data, I assessed each thought for its valence, as well as for meeting a common sense definition of "stereotype" (vs. observations, knowledge (even if incorrect), or nonsensical thoughts). I removed all thoughts that were "positive" (e.g., cool, carefree), and that did not make sense. I also removed any stereotypes that were "neutral" (e.g., movie stars, characters). Additionally, any stereotypes that were questionable as to their valence (it would depend on who you ask) were also removed (e.g., "Don't care what people think about them; Blue collar worker)." Further, I removed all thoughts that were factual statements, observations (whether correct or not, but had no valence with respect to the *person* being evaluated), advice, and nonsensical (e.g., "Busy," "They have an increased risk for heart disease). Finally, I considered some of the common categories based on individual word-based meaning. For example, thoughts like "could get lung cancer" were removed; however, thoughts like "All smokers will get lung cancer," or "Smokers are unhealthy," were left in for analysis. This decision was based on the negative attribute of knowingly giving one's self a disease (100% of the time) or believing that

100% of people who smoked coughed a lot. Negative attributes that *could be true* but were written as definitive facts were also included for analysis. All of these thoughts were pasted into a separate document for future research, if desired.

Finally, I resorted the thoughts again to eliminate the empty cells left from cutting and pasting. After assessing, cleaning, and organizing the remaining thoughts, it left a total of 1,537 individual stereotypes for analysis.

From there, I used my journal to begin "mapping" or looking for broad themes that emerged from the stereotypes, a strategy often used in qualitative analyses (Charmaz, 2002; Strauss & Corbin, 1997). After the initial pass-though, I reduced the categories to 43 general groups that I felt encapsulated the data. I then went through these 43 categories again looking for broader themes. After my second pass, this preliminary analysis resulted in 36 categories.

This codebook was designed for myself and another researcher to independently go back through the 1,537 individual thoughts and assign codes to each. The second researcher had no access to the thoughts prior to evaluation (nor access to any of the data beyond the list of cleaned stereotypes).

After individually coding the stereotypes, a Krippendorf's Alpha for reliability was run via SPSS to determine agreement. In the case of a low alpha, disagreements would have been discussed and agreed upon, however Krippendorf's alpha was excellent (smoking .903, vaping .912).

After reliability was calculated for this coding scheme, I created a new scale using the categories and sub-categories of the final codes. I ran the survey for 100 participants and then used confirmatory factor analysis to determine whether these attributes were represented in the pre-validated scale by Aloise-Young & Hennigen's (1999), and whether any stereotypes should

be added to that scale. There were some adjectives that were "missing" from the original scale based on my qualitative exploration.

Discussion/Implications for Main Study

Overall, I found that many of the broader stereotypes that I found in my exploration were already present in Aloise-Young & Hennigen's (1999) scale. However, because the scale was originally used for adolescents, I also added some stereotypes that consistently emerged in my coding that were not already present. The final reliability for the adapted scale was determined after main data collection.

Manipulation Check and Discrimination Scale Analysis and Results

As previously discussed, I used Amazon's MTurk for sampling and checking my message manipulations. For the manipulation checks, I created eight different surveys, each with a different condition and behavior. I also set up two additional identical surveys, but without any stimuli to use as control conditions. People who participated in the pretest randomly chose one of the ten links for the survey, meaning they would all receive the same questionnaires but would view one of ten different message conditions based on which link they chose.

Analyses and Results (Manipulation Check and Discrimination Scale)

All four of the EPPM's measures (severity, susceptibility, self-efficacy, and response efficacy) were included to check reliabilities, and all Chronbach's alpha reliabilities were acceptable (see Tables 5-8 for descriptive statistics and reliabilities). To determine whether the message manipulations were successful, I ran a pilot test for the smoking (N = 303) and vaping (N = 537) conditions separately. Each separate condition was tested with a unique sample; the survey was set so that no participants could respond to more than one of the ten distinct conditions (five conditions across two behaviors). I collapsed all results for analysis. Univariate

analysis results are also presented in Tables 9-12. For smoking conditions, participants perceived no differences between threat or efficacy conditions ($F = 1.226$, df (2,300), $p = .295$) For vaping, Tukey's post hoc test showed a significant difference in perceptions of threat such that there was a significant difference in high threat ($M = 5.35$, $SD = 1.39$) and low threat perceptions ($M = 4.90$, $SD = 1.52$), and a significant difference between high threat and control conditions ($M = 4.73$, $SD = 1.63$). However, there was no significant threat between low threat and control conditions. On the other hand, there were no perceptions of difference between any of the efficacy conditions for vaping ($F = 1.297$, df (2,534), $p = .245$).

I wanted to discover whether there might have been differences of perception of threat and efficacy based on audience type (primary versus secondary). Maybe people who engage in a risky (and addictive behavior) have different perceptions regardless of message content. To examine these questions, I divided each of the samples by primary and secondary audiences (those who smoke/vape versus those who do not), and reran univariate analyses to compare the two groups. Secondary audiences perceived vaping messages (regardless of threat condition) as significantly more threatening (M = 5.21, SD = 1.42) than primary audiences (M =3.82, SD = 1.63). Similarly, secondary audiences perceived vaping messages (regardless of efficacy condition) as having significantly more efficacy (M = 5.23, SD = .96) than primary audiences (M = 4.92, SD = .95). For main effects, see tables 13-16.

Considering my interest for this project is in secondary audiences, I analyzed the message manipulation one more time using only secondary audience members. The results were consistent with the combined audience type group. However, it is important to remember that there were significant differences between the two audience types, which points to a difference in perception of these messages. Despite questionable manipulations, I decided to keep the

stimuli for both theoretical and external validity reasons. But I did narrow the conditions down, reflecting real-world campaign messages. The theoretical and practical rationales for this decision are discussed further below.

Analyses and Results (Discrimination Scale)

The new discrimination scale was created to reflect interpersonal, social, and policy-level behaviors toward another group. The following questions represented interpersonal level discrimination (*1 = strongly disagree to 7 = strongly agree*): I would approach someone for directions who [smokes/uses an e-cig]. I would chat with someone who [smokes/uses an e-cig]. I would befriend someone who [smokes/uses an e-cig]. The following items represented social-level discrimination: I would introduce someone who [smokes/uses an e-cig] to my friends or family. I would hang out with or date someone who [smokes/uses an e-cig]. I would marry someone who [smokes/uses an e-cig]. Finally, the following items were to measure policy/societal-level discrimination: I think people who [smoke/have vape] shouldn't be hired for some jobs. I think there should be bans on [smoking/vaping]. I think there should be more regulation on [smoking/vaping]. I think health insurance premiums should be higher for people who [smoke/use an e-cig]. I do not think people who smoke/vape should get welfare. I do not think people who smoke/vape should get food stamps.

Data was collected during the preliminary testing to run factor analysis on the scale and three subscales. Results revealed that the measure loaded strongly onto four components instead of three. The interpersonal and social dimensions loaded as planned, but the societal-level scale loaded as two separate sub-scales, seemingly representing one factor as policy and another as job-related. Reliabilities for each of these subscales were good (interpersonal α =912; social α =

.879; policy α =.869; job-related α = .794), as was the scale's overall reliability (Chronbach's α = .925). Thus the scale was included in the main study with all four sub-components.

Discussion/Implications for Main Study

After running manipulation checks on my message conditions, I discovered that some of the conditions were not being perceived as significantly different from one another. I ran post hoc tests to determine which message features (of the two main factors: threat and efficacy) were differentiated by participants and which were not.

For vaping, I found that there was a significant main effect, but participants did not differ in their perceptions between low threat and the control. They did, however, report different perceptions of high threat vs. low threat, and high threat vs. the control (no message condition). There was no main effect for efficacy.

For smoking, both manipulation checks failed. There was no significant difference in perception between high or low threat (although the perception of difference between control and high threat approached significance). There was no main effect for efficacy, either.

To further investigate the conditions, I filtered out all primary audience members (people who engage in the behavior). In other words, I eliminated smokers from the smoking condition and people who used electronic cigarettes from the vaping condition. I then reran manipulation checks on just the secondary audiences for each behavioral condition.

The same results occurred for secondary audiences for vaping threat. There were significant differences between high threat and control, and high and low threat conditions, but not between low threat and control. There were also no effects for efficacy.

At this point I ran an ANOVA between the two audience types on average threat and efficacy to determine whether there were mean differences. There were: primary audiences had a

significantly lower threat mean than secondary and a significantly lower efficacy mean that secondary.

I repeated these processes for smoking. Secondary audience results were consistent with the combined samples. Comparing secondary audience means, however, nonsmokers saw the threat as significantly more threatening and more efficacious to quit than did smokers.

Essentially, it seems that participants noted the presence or absence of efficacy compared to the control (no message). However, without the subtle differences between high/low threat/efficacy, it would seem wasteful and unfruitful to pursue the original conditions for each behavior (high/high, high/low, low/high, control).

With vaping, the topic is novel enough that it was easier to manipulate the threat and efficacy components (more so threat, however). However, with smoking, the threat distribution was highly skewed, which makes sense considering the pervasive awareness most people already have of regarding the *real* threats of smoking. Considering that there was a difference in means for all threat and efficacy conditions (regardless of behavior) between primary and secondary audiences, I changed my design to capture the presence or absence of threat and efficacy. It is possible that these messages may not solely create perceptions of primary audiences, but that they may prime existing perceptions as well.

Although the manipulation checks failed for smoking, I moved forward with smoking messages because the results may be interesting to compare to vaping; many of the open-ended stereotypes people reported during the pretests were the same between the two conditions. However, the risks for one are well-known, while the risks are still uncertain with the other. Thus, my main study contained the following conditions in Figures 5 and 6:

Smoking	High Threat/High Efficacy	No Threat/High Efficacy
	High Threat/No Efficacy	No Message

Figure 5. Final smoking conditions for main study.

Vaping	High Threat/High Efficacy	No Threat/High Efficacy
	High Threat/No Efficacy	No Message

Figure 6. Final vaping conditions for the main study.

This change in conditions did not affect the project theoretically. Regarding the EPPM, Witte (1992) admittedly discusses the "amount" of threat or efficacy, seeking a balance between the two that is optimal. However, a broad line of research has shown an additive (vs. multiplicative) effect of threat and efficacy. Many scholars argue that the bigger the threat, the better the outcomes (pending that you also have an efficacy message of some sort). Although research has found that the effects are not multiplicative, like in Witte's (1992) original theory, the EPPM is still the best fear-appeal framework through which to consider message exposure reactions within this project. Hovland, Janis, and Kelly's (1953) Negative Drive Model does consider efficacy as a primary part of its framework. Leventhal's (1970) Parallel Response model includes both cognitive and affective responses to fear appeals and considers efficacy as part of the recommended response. However, the author argues that the quality and believability of a recommended response is more important than the level of threat or fear aroused. Protection Motivation Theory (Rogers, 1975; 1983) does include all four components that comprise threat and efficacy, much like the EPPM. However, this theory focuses on cognitive processing people undergo when exposed to the message.

Witte's model includes the components for threat and efficacy as primary elements, and uses key components from each of these other theories to create a more holistic and detailed

account of message components' relationships to both emotional responses and cognitive responses. An EPPM-framed message, thus, has the ability to create both cognitive and affective reactions toward the message or topic. The original conception for the EPPM is prescriptive for inducing fear that results in danger control processes for primary audiences; however, my interests are on how these messages may prime or affect secondary audiences, and this framework works well for determining potential cognitive and emotional reactions to messages utilizing combinations of threat and efficacy.

Finally, although internal validity may not be optimal without full manipulation of each of the variables (on dimensions of high and low), external validity is strengthened. A lot of work in the evaluation of campaigns shows that rarely is efficacy included at all, and when it is, it is not typically complex or extended (e.g., Batchelder and Matusitzm 2014; Bonnar-Kidd et al., 2009; De Vocht et al., 2013; Goodall & Reed, 2013; LaVoie & Quick, 2013; Muter et al., 2013; Siu, 2010) Additionally, threat is commonly severe in real-world campaigns.

With respect to smoking as a manipulated message topic, there is obviously a ceiling effect regarding threat and some concern about the perception of efficacy. The univariate analyses for smoking threat and efficacy perceptions were insignificant, both in primary analysis, as well as in a closer examination via a Tukey post hoc test. The failure of the message manipulations to induce varied levels of perceived threat and efficacy are likely due to the population's existing general knowledge of the severity of smoking. Additionally, in exploring the open-ended thoughts participants listed regarding people who smoke, there was a notable theme regarding the "easiness" of smoking cessation. Addiction is a complicated topic involving genetics, chemical brain changes, operant conditioning, environment, and choice. However, based on the coexistence of repeated thoughts of "addicted" and "easy to quit," it is possible that

the general public (including those who smoke) may not understand "addiction" in the same way that science or medicine does.

Further, social cognitive theory and the contact hypothesis argue that our perceptions of, and attitudes and behaviors toward, others are heavily influenced by exposure and observation. While some people struggle to quit (due to addiction), others smoke without true addiction – to people who observe others who "simply quit" when they want to, this may reiterate or create the belief that it should be easy for all smokers. Further, for nonsmokers who have never dealt with addiction issues themselves (or had close contact with others who have), it is possible that smoking is viewed as a bad habit, that "addiction" is a loosely used term, and/or that there has been little to no reinforcement of the difficulty some people have with smoking cessation. For people who smoke, their perceptions of cessation efficacy are likely colored by their own attempts/success in quitting, or the belief that they "could quit if they wanted," despite not having tried. For people who smoke and have struggled to quit, efficacy scores would likely be lower, regardless of the efficacy message; however, this project did not include a measure asking participants whether they are addicted, have attempted to quit, or struggle with smoking cessation. Thus, the preceding is educated and logical speculations regarding the highly skewed threat and efficacy perceptions in the pretest, but have not been empirically tested. However, future research should investigate these ideas.

Although the message manipulations may fail to register different levels of perceived threat and efficacy, and be highly skewed (there is little variance), I still chose to include this behavior and its message conditions in the main study. This is for two primary reasons: 1) there are statistically significant differences between perceived threat and perceived efficacy between primary and secondary audiences. In other words, smokers perceive threat to be slightly less and

efficacy to be slightly lower, regardless of message condition, than do nonsmokers. This project is concerned with secondary audiences (although primary audience data will be analyzed in future analyses). The difference between the perceptions of these two audiences may point to misconceptions, misunderstandings, and the greater potential for nonsmokers to stereotype, stigmatize, or discriminate against smokers; and 2) considering that Americans are still determining beliefs and attitudes toward vaping, but are already beginning to link it with smoking cigarettes, smoking can be used as a sort of "baseline" for comparison between the two behaviors. Many researchers have already deemed smoking to be a stigmatized behavior, and some have established stigma associated with the *people* who engage in the behavior.

Additionally, new policies and public debates regarding vaping have begun to associate the two behaviors; for example, many nonsmoking bans now include the use of electronic cigarettes, as well. Unlike smoking, which has been banned in many places due to health concerns such as second hand smoke and environmental concerns like littering, vaping bans have largely been based on the idea that it *looks like* smoking. There are some arguments for these bans that have some logic, largely in the difficulty of enforcing smoking bans when it is difficult to tell from afar the difference. However, many public health scholars, and even doctors, argue that vaping is an effective cessation strategy and that these bans are eliminating an alternative that may help some people quit. Further, the same camp argues that even if cessation does not occur, vaping (assuming the liquid is regulated and of quality) is far less dangerous than smoking, and it does not pose the same issues of second hand exposure or littering. Regardless of the harm reduction arguments, the frames that media, social networking, and policy utilize when discussing and making decisions regarding vaping will likely eventually affect the way in which the general public sees the behavior, as well. Because it is so closely tied to smoking, and also

resembles the act of smoking, comparing the results from vaping against smoking in this project should yield interesting comparisons, as well as provide some clues as to where public perceptions might lie if fear appeals are used in campaigns against vaping.

The discrimination scale had four factors, instead of the anticipated three. However, based on the results of the CFA and reliabilities, the scale in its entirety was included in the main study.

Conclusion

The preliminary tests for this study revealed some needed changes moving into the main study. First, the stereotype investigation was fruitful, both mimicking existing scales and expanding on them. The main study included the expanded version of stereotype measures from the pretest. Second, the measures used to assess perceived threat and perceived efficacy were reliable and, thus, were added to the final study without change. Unfortunately, perceptions of the various message manipulations were shaky, at best. However, for theoretical purposes, these conditions were left in, although pared down, for the main study. Although this choice also lends external validity to the study, it means that some hypotheses may not be supported and/or that results should be taken with these issues in mind. Results for tests of differences between the two conditions that were successfully manipulated will be presented in its own section at the beginning of the results chapter. Finally, the new discrimination scale fared well and was, thus, included in the main study.

Chapter Four: Main Study Methods

Chapter Overview

This chapter outlines the procedures and measures for the main study. Recruiting and data collection was all done via Amazon's MTurk. The final study conditions, and some of the measures, were determined based on the preliminary study previously outlined in Chapter Three. The study, including new measures, was approved by the Institutional Review Board, and all respondents provided informed consent for participation before they could proceed to the survey. The project was designed as an experiment (2 (high/no threat) X 2 (high/no efficacy) X 2 (smoking/vaping), with separate stimuli and corresponding surveys for each condition. Participants were not able to complete more than one condition in order to maintain valid experimental procedures. The specifics of the procedure and measures are discussed below.

Recruiting and Sampling

Due to the lengthy discussion of the rationale for using MTurk in the previous chapter, I will not rehash those arguments here. However, as a reminder, I chose MTurk for recruiting and sampling in order to get a broad general population sample, as well as to collect a larger number of participants than would have been possible in a college sample. Again, MTurk has been studied and validated as a legitimate vehicle for data collection, and data collected from MTurk closely resembles data collected through other face-to-face or online methods.

Workers were paid $0.75 to complete the study, which took between fifteen and twenty-five minutes on average. Participants received payment within one week of completion. To be eligible for payment for completion, the last page of the study had a "secret code" for payment (N4R8L5), and workers had to type the code into the completion box on MTurk. Workers had a maximum of thirty minutes to take the survey; participants who took less than one minute

(default for MTurk) or more than thirty minutes to take their survey were reverse rejected by MTurk. Reverse rejections are also automated if a worker puts in the incorrect secret code in the completion box, thus I monitored the reverse rejections to ensure that participants who did complete the survey received payment (e.g., if there was a typo in their code).

To avoid the issue of workers taking more than one survey condition and maintain experimental integrity, I used MTurk primes features, barring people to take more than one of the eight conditional surveys by denying access to a survey if the worker's IP address matched an IP address from the completion of one of the other seven conditions. I requested, and set the limit, at two hundred participants for each condition's survey, so once the limit was reached, MTurk automatically closed the HIT. Just like the preliminary study, I also used "micro-batching" for the main study.

To access the survey, participants had to read and electronically sign informed consent. I used skip logic for the informed consent procedure so that participants could start the survey if the worker read and signed the informed consent agreement, or participants were redirected to a page with a customized message explaining they were ineligible for the study if they did not sign informant consent.

There were eight surveys posted to MTurk (one for each of the conditions) that participants could complete. The only stipulations for participating were age (over eighteen) and country (United States). The survey description explained the reason for the study (I am a graduate student collecting data for my dissertation), but it was vague with respect to the nature of the inquiry ("interested in your opinions about some current health and policy issues"). I chose to disclose my student status because the amount I could afford to pay was very low for MTurk ($0.75). To ensure people participated, I did not want MTurk workers to believe I was trying to

"fleece" anyone. I had quite a few people write me to complain about the low pay during the preliminary study, but when I would respond and explain that I was a graduate student people were overwhelmingly supportive. I wanted to ensure that my MTurk ratings remained high (if they are too low, people do not take your surveys), so I decided to be upfront with the main study. With respect to the vague description of the study, this was planned and approved by the IRB. As with the preliminary study, I did not want to "prime" audience members to think about the topics of smoking or vaping before they saw the messages.

Descriptive statistics for each of the eight conditions are presented in Tables 13-20. Overall, the combined secondary audience sample (N = 1233) was mostly White (80.1% White, 7.1% Black, 4.3% Latino, 4.6% Asian, 2.6% multi-racial, 1.1% other) and female (64% female, 35.6% male, .3% Other). As a whole, the sample was fairly evenly distributed with respect to income and education, but the majority of participants reported a household income of between $25,000 and $75,000 (<$25K 19.5%, $25-50K 30%, $50-75K 23.3%, $75-100K 14.2%, $100K+ 12.6%) and having some college or a college degree (<HS .2%, HS or GED 8%, some college 31.3%, College degree 42.8%, Graduate degree 17.5%). Because I am interested in secondary audiences, smoking and vaping were considered. Overall, within the smoking conditions 21% reported smoking, and 21% reported vaping. Analyses were only performed on nonsmokers/nonvapers. None of the individual samples for conditions statistically varied in any demographic measure from the other groups.

Stimuli

The same stimuli messages were used as in the preliminary study, but I eliminated two of the conditions (low threat and low efficacy). As a reminder, the high threat conditions featured red backgrounds and frightening outcomes of smoking or vaping. For high threat/no efficacy, the

message had no efficacy component at all. The no threat conditions were blue and only had the introduction message and efficacy messages (for high efficacy conditions). The no threat/no efficacy condition (control) was operationalized as no message exposure. In other words, participants in the control conditions received no stimuli. Main study stimuli are presented in the Appendices.

Procedure

I labeled each condition with a unique code for identification. The surveys were titled "Health, Policy, and Public Opinion" followed by a string of letters. High conditions received an "H" whereas no conditions received an "N." The order of the letters was always the same – Threat/Efficacy and the H and N were followed by a "T" or "E" to represent those conditions. Vaping was represented with a "V" and smoking with an "S." For example, a high threat no efficacy smoking message had the letters "SHTNE." These designations were only used in the title of the surveys, so each of these letters also corresponded to a number used for coding: 1, 2, and 0, as in the preliminary study. Threat and efficacy were each assigned a "1," no threat and no efficacy were each assigned a "0," and the stimuli were each assigned a representative number (smoking = "1," vaping = "2"). This system was used to assign numbers to each condition in the following order: threat, efficacy, behavior. Thus, each of the eight conditions uploaded to MTurk labeled and identified with a unique alphabetic code and a three-digit number (SHTNE/110, SHTHE/111, SNTHE/101, SC/100, VHTNE/210, VHTHE/211, VNTHE/201, VC/200).

After agreeing to participate via informed consent, MTurk workers completed the survey for locus of control. On the following page, those who were in non-control conditions were shown a flyer regarding either smoking or vaping, along with the instructions: "Please take the time to read and look at the following flyer. Consider all aspects of the flyer and its content.

"**Please take the time to carefully look at and read the entire flyer."** After participants viewed/read the flyer, they moved onto the next page, where they began the completion of the remainder of the survey. Participants answered questions regarding: threat and efficacy (perceived severity, perceived susceptibility, perceived self-efficacy, perceived response-efficacy), stereotype endorsement, stigma beliefs, attribution, controllability, emotions toward the topic, emotions toward people who engage in the topic, blame, discrimination, smoking/vaping behaviors, and demographics. Throughout the survey, I placed "attention check" questions, as well. These included items such as: (*1 = strongly disagree to 7 = strongly agree)* "This survey is about the mating habits of frogs," "The sun is typically purple," "This survey is about designer kitchen appliances," "Elephants are usually tiny creatures," and "Hawks are a type of bird." These questions were embedded in the middle of other survey items to ensure people did not randomly click on numbers to rush through the survey. Later, I eliminated all responses from participants who were obviously not reading the questions.

Upon completion of the entire survey, participants were given the secret code for payment, along with a debriefing message explaining the study, debunking the false facts in the stimuli messages, and providing resources for more information on smoking/vaping (see Appendices). They then entered the code, which prompted a final thank you message upon completion.

Measures

Locus of Control. This study forewent the more nuanced Health Locus of Control measure (Wallston, Wallston, Kaplan, & Maides, 1976). First, although shorter, it has lower reliability (Wallston et al., 1976). Additionally, a person's general orientation toward life may be more telling, especially because people are likely to be aware that particular health behaviors *can*

lead to negative health outcomes. Rotter's (1966) scale is 23 items long, and includes an additional six "filler" questions to mask the intention of the test. The scale is a forced dichotomy between two options for each question. To determine scores (internal vs. external), I referenced Rotter's codebook, which provides the following instructions: "score one point for each of the following: 2.a, 3.b, 4.b, 5.b, 6.a, 7.a, 9.a, 10.b, 11.b, 12.b, 13.b, 15.b, 16.a, 17.a, 18.a, 20.a, 21.a, 22.b, 23.a, 25.a, 26.b, 28.b, 29.a." Participants with a higher score have external locus of control, whereas participants with a lower score have an internal locus of control. To assess "high" and "low," I performed a median split; scores above the median were dummy coded as external (1), whereas scores below the media split were dummy coded as internal (2). Past reliabilities have ranged between .65 and .79. The reliability for this study was $\alpha = .804$

Perceived threat to smokers/vapers. To assess threat, I used Witte, Cameron, McKeon, and Berkowitz's (1996) Risk Behavior Diagnostic (RBD) scale for susceptibility and severity. Each sub-component consists of three questions and is a Likert type scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. An example of an item is "I believe the threat from smoking is severe." Previous reliabilities on RBD subscales have been good (e.g., Gore & Bracken, 2005, severity $\alpha = .88$, susceptibility $\alpha = .91$; Witte et al., 1996, threat $\alpha = .71$).

These questions were slightly modified from their original language, as discussed in the preliminary results. The preliminary study for this dissertation supported the reliability of these adapted measures as did the main study, severity $\alpha = .971$, susceptibility $\alpha = .934$.

Perceived efficacy for smokers/vapers. Perceived efficacy was determined based on self-efficacy and response efficacy scores from measures from the RBD (Witte et al., 1996). Self-efficacy consisted of three items, modified to make sense to both primary and secondary audiences, for example, "People are able to quit smoking." Response efficacy, as well, was

assessed using three items from the RBD, each modified to be appropriate for target and secondary audiences. One item, for instance, read, "Quitting smoking works for preventing its health threat." All six perceived efficacy items used the same Likert-type scale as with susceptibility and severity. Perceived efficacy has had good reliabilities in previous studies (e.g., Gore & Bracken, 2005, response efficacy α = .92, self-efficacy α = .96; Witte et al.,1996, perceived efficacy α = .73). The results were reliable for the main study, response efficacy α = .899, self-efficacy α = .700.

Attribution. Attribution was assessed using modified questions from Stuber, Galea, and Link's (2008) study on attribution. Participants indicated agreement with the statement, "X behavior is caused by [ITEM]." The items used are weak character, bad genes, and stress. In addition, added the response "environment." Participants were asked for their level of agreement, from *1=not at all* to *7=completely agree* for each statement.

Controllability. This measure assessed the level of responsibility attributed to people for the *continuation* of a dangerous behavior. This is a related, but distinct, concept from attribution and blame for one's potential illness outcome. Smith's (2012; 2014) measure was adapted to reflect this concept and consisted of three items for disagreement/agreement (on a scale of 1-7). Statements included, "The only person who is responsible for quitting smoking is the one doing it," and, "Continuing to smoke, instead of quitting, is the smoker's fault." Reliabilities were good (α = .900).

Stigma. Stigma was assessed in a couple ways. First, the stigma belief scale, adapted from Link, Cullen, Struening, Shrout, and Dohrenwend (1989) will address stigma in a way that other scholars (e.g., Smith, 2012) have, and this scale has shown to be reliable, even when adapted from mental health to other health topics. It consists of twelve items evaluating the

devaluation of particular people and, although originally a 6-point Likert scale, was adapted to be a 7-point scale for consistency with other measures. Reliability was solid $\alpha = .896$.

Second, I wanted to see if stigma could be operationalized in a different way by examining its individual components. Arguing that stigma is a combination of negative thoughts or stereotypes (cognitions) and negative affect (specifically emotions related to disgust and anger), I measured each of these individually to see whether their product would account for more variance than the standard scale. This will be the first time the measurement of stigma is measured and explored this way. Considering the heavy emphasis placed on affect in the stigma literature (specifically, disgust and anger), and the emphasis on negative cognitions (see Link & Phelan, 2001; Smith, 2007; 2012; Weiner, 1995), attempting a nuanced measurement using these observed variables seems a worthy undertaking.

To assess negative thoughts/stereotypes, participants were provided the stereotype endorsement scale, adapted from Aloise-Young and Hennigan (1999) in the preliminary study. The reliability for this new scale was excellent ($\alpha = .964$).

To assess the affective component of stigma, participants were given a list of emotions and asked how much (on a scale from1-7) they feel each toward **the behavior** and then again regarding **people who engage in the behavior.** To avoid priming by only presenting negative emotions prior to stigma measures, positive and neutral emotions were included in the list. I was unable to find a comprehensive list of discrete emotions that would be well suited for this study; however, Weiner (2006) developed a scale of "moral emotions," arguing that stigma and social judgments all come from a place of moral evaluation. This aligns well with Smith's (2007), Goffman's (1963) and Guttman's (2000) observation that stigmatizing is often tied to the idea of weak moral character; thus, moral emotions would seem reasonable choice for my emotion

measure. The emotions listed in the measure will be: Admiration, anger, gratitude, indignation, jealousy, regret, Schadenfreude (joy at the suffering of others), scorn (contempt), shame (humiliation), sympathy (pity) and disgust (for a complete review of each of these emotion's moral dimensions, see Weiner, 2006). Reliabilities were ran on 1) negative emotions (α = .843), 2) positive emotions, reverse coded (α = .926), all items coded negatively (α = .774), and what I call the "stigma-related emotions" (disgust, anger, indignation, and scorn) (α = .849).

Blame. Responsibility and blame are not synonymous for this project. Blame refers to the responsibility attributed to a person for his/her own poor health *outcomes* (whereas responsibility refers to perceived responsibility for the onset and ongoing control of one's *behavior)*. For blame, I included a measure adapted from Smith (2012; 2014) that was originally used to measure perceived responsibility, which had decent, albeit not high, initial reliability (α = .64). There are three items, consisting of disagreement/agreement (on a scale of 1-7) with statements such as "people who get ill from smoking are at fault for their own disease." These items represent blame for outcomes more so than blame for ongoing behavior, thus they will be employed in this way. Reliability for this scale was acceptable (α = .847).

Discrimination. For discrimination, I utilized the newly developed scale from the preliminary study. My intention was to measure behavior on three dimensions: three items on interpersonal, three on social, and three on political behaviors, although CFA determined that there were four dimensions. I chose to measure an interpersonal dimension because stigma is associated with interpersonal isolation (e.g., Goffman, 1963; Meisenbach, 2010). Interpersonal behaviors would consist of acts like approaching, talking to or befriending someone who enacts the risky behavior. A social dimension was in this measure because it is the community at large that assigns stigma (e.g., Smith, 2007), and those who are stigmatized internalize social

disapproval (e.g., Corrigan, Kuwabara, O'Shaughnessy, 2009; Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Goffman, 1963; Meisenbach, 2010, Smith, 2007). Social questions would involve situations such as introducing such a person to groups of friends, going out together, and marrying a smoker. Rozin and Singh (1999) have several validated questions from which I could pull for some of these categories.

Questions involving policy were included because of the power differential between those who are "normal" and those who are marginalized (Fiske, 1998). Some scholars argue particular policies support or enact discrimination against, or cause further disparities between, groups (e.g., Stuber, Galea, & Link, 2008). Political questions consisted of interventions or potentially discriminatory policies, such as job acceptance/denial, bans, taxes, insurance premiums, or funding for educational programs (some questions will be reverse coded). Finally, the fourth dimension, reflecting attitudes about work related relationships and goals are arguably another dimension of power, but professional interactions and perceptions of others are distinct from other types of policies. The reliability for the scale was good ($\alpha = .778$).

Existing Health Behaviors. Existing health behaviors was assessed with one question from the CDC National Tobacco Questionnaire (2010). The item chosen will determine behavior and be modified for each topic. The item asks, "During the last 30 days, how many days have you had a cigarette/used an electronic cigarette, even 1 or 2 puffs?" Beyond that, the survey does not indicate how researchers should or should not categorize this data. In the case of this project, I am following the procedure of a previous study, in which the category was coded dichotomously (LaVoie, Quick, Riles, Lambert, 2016). This involves "dummy coding" for those who report zero versus those who answer more than zero times in the last thirty days. I only used

the data from participants who reported no smoking or vaping for the main hypotheses of this study.

Demographics. I included SES and ethnicity in my demographic measures. I have included ethnicity and SES because research has shown that health behaviors affect different populations disproportionately, and often it is the less empowered who are most affected. Participants were offered a list of choices for ethnicity (including multi-racial) and asked to mark the ethnicity with which they most identify. Additionally, this study assessed SES, which will be comprised of two components: income and education.

Statistical Analysis Overview

By running a series of regressions, I was able to explore the associations between the variables I have proposed in my study. With respect to the competing stigma measures, I ran competing regression models for old and new variables, comparing the variance explained between the traditional measures and the new measures (e.g., on perceived behavioral responsibility as an interaction of two dimensions: attribution and controllability or stigma as an interaction between affect and stereotypes). I also utilized multivariate and/or univariate analyses to look for differences among several of my variables. Each independent variable (locus of control, ethnicity, and SES) was explored for differences on numerous different outcomes (stigma, stereotypes, emotions, attributions, controllability, blame, and discrimination behaviors). ANOVA will be employed for the independent variables of education, income, and ethnicity and Tukey's post hoc tests will then be conducted to determine mean differences for each difference (Pallant, 2013).

For the independent variable of LOC, I used a series of four ANOVAs because LOC will only have two groups (high external or high internal). Each dependent variable will be assessed individually in the results.

Conclusion

This chapter explained the sampling, procedures, measures, and statistical approaches for the main study. The following chapter discusses the analyses and results for the study's hypotheses and research questions.

Chapter Five: Analysis and Results

Chapter Overview

The following chapter discusses the analyses used to test the data, hypotheses, and research questions for this dissertation, as well as provide the results for each test. First, manipulation checks will be conducted on the stimuli conditions. Second, regression analyses will be utilized to test the proposed relationships between the stimuli, responsibility, stigma, and discrimination. To observationally examine the same data, bivariate correlations will also be run to look for patterns in associations. Finally, multivariate analyses will be conducted to determine whether the dependent variables vary as a function of SES or locus of control. Although results will be presented in this chapter, discussion and implications of the results will be in the following chapter.

Manipulation Checks

In order to determine whether differences emerged between the independent variables from the experimental conditions, ANOVAs were performed. For descriptive statistics, see Table 22. To compare threat conditions for smoking and vaping, the averages for each condition were examined for significant differences between threat perceptions in threat conditions. To examine where the differences in conditions lay Tukey ($p < .05$) post hoc tests were performed. No significant differences between the four conditions emerged for perceived threat in *smoking* conditions. For vaping (N = 656) there were some significant results ($F = 4.14$, $df = (3,653)$, $p = .04$). The only significant differences were between the high threat/high efficacy condition and the vaping control, which was in the predicted direction, and the high threat/no efficacy condition compared to the control, which was also in the predicted direction. No other significant differences were found for the conditions.

Like the threat conditions, I compared high versus no efficacy conditions for smoking and vaping, using the averages for each condition $F(7, 1225) = 1.237$, $p = .279$. Unfortunately, the overall univariate test of difference was insignificant. However, I examined the post hoc tests anyway to see whether any trends emerged. Within each behavior, no significant differences were present between efficacy manipulations using Tukey's test. Overall, the perceived efficacy of smoking conditions failed the manipulation check, and the results for vaping were not significant using a conservative post hoc test. In general, the two topics, smoking and vaping, did have some differences between them (e.g., a couple of the threat conditions being differentiated in the vaping topic), but only threat manipulations for vaping were successful, limiting my ability to directly compare the two behaviors experimentally.

So that I have a clean study and follow the same guidelines for both topics, tests of differences on outcomes will be examined for vaping conditions only. The remainder of the analysis utilizes observational survey data to explore the associations between variables. In other words, experimental differences will only be explored for vaping (specifically threat), and perceived threat and perceived efficacy are used as observational proxies for all hypotheses and research questions. The partial failure of perceived efficacy is disappointing; however, this project's arguments are not theoretically affected. In other words, it is based on the perceptions of threat and efficacy that hypotheses and research questions are founded. Ideally, this project was to show that messages that increased these two perceptions led to various stigma-related outcomes in both smoking and vaping conditions. However, that argument still stands without the complete manipulation of the messages because other EPPM-based messages may successfully increase or decrease threat and/or efficacy perceptions.

As a final note on manipulation checks, it is worth noting that there were significant differences between perceptions of threat and efficacy between the two behaviors (smoking and vaping). The means for smoking threat did significantly differ from the means for vaping threat, pointing to an interesting difference in the way these two parallel behaviors are perceived. However, efficacy perceptions did not vary between the two behaviors; this may point to secondary audiences' belief that quitting a negative health behavior is easy, regardless of what it is. This is reflected in the high and similar means and standard deviations across both smoking and vaping efficacy perceptions. I will reflect on the possible implications of this pattern in a later chapter.

Hypothesis and Research Question Analyses and Results

The following section will look at the hypotheses and research questions of this project by using multiple regression, correlations, and multivariate analyses. All required data assumptions were tested and met prior to the beginning of analysis.

Descriptive Statistics and Sample Differences

With regard to the variables of stigma, responsibility, negative emotions, stereotypical thoughts, blame, and discrimination, see Table 30 and Table 31 for the descriptive statistics of these data. Stigma toward those who smoked was average across all conditions, hovering around the midpoint and varying approximately one unit for all conditions, although smoking was slightly more stigmatized than vaping.

To make sure blame and controllability were, in fact, measuring nuanced differences, a Pearson's bivariate correlation was conducted. Although the two constructs are strongly correlated (r = .52), they are not so correlated to conclude they are measuring the same construct. Both vaping and smoking groups (across all conditions) rated responsibility as

extremely high, with means consistently two units or more over the midpoint. There were no differences in responsibility assignment between the two behavior groups. The same pattern was found for blame. See Table 32 and 33 for correlations between major constructs.

Negative emotions toward people who enact smoking or vaping behaviors, however, did differ between the two behaviors. While negative emotions toward smokers hovered around the midpoint, negative emotions toward vapers were significantly lower across all conditions. The same general pattern was found between stereotypical thoughts about smokers versus vapers; for all conditions that were not controls, there were slightly less stereotypical thoughts from the vaping group, as compared to the smoking group. A very similar pattern was found for discrimination between the smoking group and the vaping group. Means hovered above the midpoint for both groups, but discrimination toward vapers was slightly lower.

Hypotheses Testing and Research Question Exploration

Bivariate tests for association. First, I wanted to observationally determine whether the theorized relationships between variables followed the associations laid out by this project and hypotheses. Bivariate correlation analyses were conducted on the primary independent and dependent variables to preliminarily evaluate these relationships. The correlations are presented in Table 32 (for smoking) and Table 33 (for vaping). For the smoking condition, perceived threat was significantly associated with controllability *(r* = .325), blame (*r* = .154) stereotypes (*r* = .160), and negative emotions toward people who smoke (*r* = .097). Interestingly, threat perceptions were not correlated with discrimination or stigma. Perceived efficacy followed the same pattern and was positively correlated with threat (*r* = .384) perceptions of responsibility (*r* = .294), blame (*r* = .287), stereotypical thoughts (*r* = .152), negative emotions toward smokers

(r = .159), and discrimination (r = .124). As with threat, efficacy was not significantly associated with the stigma measure, although it was a positive relationship.

In the vaping condition, a similar but stronger pattern emerged between perceived threat and the outcome variables. Perceived threat was significantly associated with controllability (r = .201), blame (r = .230) stereotypes (r = .304), negative emotions toward people who vape (r = .213), and discrimination (r = .437). In addition, perceived threat was also significantly associated with stigma (r = .248). Perceived efficacy followed the same trend as perceived threat and was significantly and positively correlated with perceptions of responsibility (r = .311), blame (r = .317), stereotypical thoughts (r = .095), and discrimination (r = .101). Efficacy was not associated with stigma or negative emotions toward people who vape.

These results largely support the relationships hypothesized by this project, at least observationally. As people perceive a behavior to be more threatening and cessation as more efficacious, they assign more personal responsibility, they have more stereotypical thoughts and negative emotions toward those who enact the behavior, they blame people who do the behavior for their own outcomes, and they discriminate more. What is not explained is why stigma assignment is inconsistently related; threat is associated with more stigma in the vaping condition, but is not in the smoking condition. This may be explained by the "ceiling" effect of the dangers of smoking; that is, people may already have stigmatizing attitudes toward smokers that are not dependent on new messages because the majority of people already know how dangerous the behavior is. The discrepancy between efficacy and threat's associations with the stigma may point to perceived threat as being the primary driver of stigma, although this will be explored further later in this dissertation. Finally, this project suggested a comparison in two different ways to measure stigma, the validated scale and the combination of negative

stereotypical thoughts and emotions. As a reminder, although the reliability of the preexisting stigma scale is good (Link, Cullen, Struening, Shrout, & Dohrenwend, 1989; (Chronbach's alpha = .896), this project questions whether this measure is truly tapping into stigma as it is conceptualized by the literature. Further exploration of these differences will occur later in this chapter.

Regression Analyses. To test the hypotheses regarding the direct and indirect effects of message exposure on outcome variables, as well as the mediating role of responsibility, multiple regression was utilized. I chose hierarchical regression so that I could manually "force" the order of the predictor variables to check for the hypothesized model's accuracy based on theoretical rationale for the order. All assumptions were met for multiple regression. Several models were run in order to examine various constructs that could be either outcomes or predictors for main effects. Hayes' and Preacher's (2008) macro for indirect/mediating effects was utilized to examine the mediating role of the responsibility constructs. The process used 5,000 bootstraps, which is standard (Field, 2008).

All hypotheses and research questions will be observationally explored throughout the results chapter. However, results of differences on outcomes by vaping conditions will be reported first, as opposed to adding more results under each hypothesis or research question heading. In this way, the results section will keep experimental results and observational results separate for ease of reading.

Experimental results (perceived differences in outcomes based on vaping conditions)

As a reminder, the conditions that were *successfully* manipulated were vaping high threat/high efficacy, vaping high threat/no efficacy, and the vaping control. In other words, threat manipulations did work for the vaping messages. ANOVAs were conducted to look for

differences in outcome variables based on threat levels for vaping. Stigma, attribution 1 (genetics), attribution 3 (stress), attribution 4 (weak character), perceived controllability, stigma, negative emotions, stereotypical thoughts, blame, and discrimination all had non-significant results based on threat. However, attribution 2 (environment) was significant, $F = 4.73$ (3, 653), $p = .003$. Specifically, people who received the message with high threat/high efficacy ($M = 4.79$, $SD = 1.693$) perceived vaping as significantly more attributed to environment than people who received the control message ($M = 4.08$, $SD = 1.87$). Further, the difference between people who received the high threat/high efficacy message and those who received the no threat/high efficacy message ($M = 4.28$, $SD = 1.936$) was marginally significant ($p = .06$) such that high threat was linked to greater perceptions of environmental attribution. Mean differences and other result information can be found in Tables 34-36 in the back of the manuscript.

The remainder of this chapter lays out each hypothesis or research question and presents the results for each in turn for *observational* data for both topics. Each topic's message conditions were collapsed and mean scores were utilized for the analyses.

H1: Messages high in threat will be positively associated with stigmatization of those who enact the threatening behavior.

First, Pearson's correlations were examined to determine whether there were any positive significant correlations between threat perceptions and stigmatization. For smoking (N = 576), the association between perceived threat and stigma was not significant and, although very small, was in the opposite hypothesized direction, $r(574) = -.017$, n.s. However, for vaping (N = 657), there was a moderate positive correlation between perceived threat and stigma, $r(655) = .248$, $p < .01$.

I also wanted to run a regression to confirm these results, but first needed to determine what covariates would be included in all regressions for this dissertation. Because the remainder of the study is observational, **covariates were controlled for in the models.** However, which demographic covariates need to be present? To determine this, I ran a series of ANOVAs to look for differences in stigma assignment based on the following demographic attributes: age, gender, race, education, and income. For smoking, there were no differences in stigma based on age, gender, or income. However, differences emerged for race and education. Specifics regarding these differences will be discussed later in the analyses to address RQ 5. For vaping, there were no significant differences for gender or race on stigma assignment. However, significant differences emerged for age, education, and income. To be overly conservative, and to account for some differences in smoking and vaping conditions, I included age, race, education, and income as covariates in all regression models for the remainder of all analyses.

Returning to H1, to confirm the correlational results, I ran a regression for threat's association with stigma, accounting for the covariates in the model. For the smoking model (N = 565), threat was not significantly associated with stigma, supporting the correlational analysis. For the vaping model (N = 654), threat was significantly associated with stigma after controlling for the covariates. The total model was significant $F(1,648) = 39.05$, $p = .000$. R^2 for the model was .08, and the adjusted R^2 was .07. Tables 37 and 38 show the standardized regression coefficients (β) for the covariates and perceived threat variable. Threat added a significant, although a small amount, of variance to the vaping model, accounting for 6% beyond the covariates, $p = .000$.

Based on the results from both the correlations and the regressions, H1 was partially supported. Threat was not positively or significantly associated with stigma for the smoking

conditions, however, it was for vaping conditions. This finding across the two conditions was stable when controlling for covariates, as well. Thus, H1 is supported for vaping, but not for smoking.

H2: Messages that include efficacy will be positively associated with stigmatization of those who enact the admonished behavior.

The same procedures as H1 were followed to determine whether positive associations existed between perceived efficacy and stigma for smoking and vaping topics. Pearson's correlations were examined to determine whether there were any positive significant correlations between efficacy perceptions and stigmatization. For smoking (N = 576), the association between perceived efficacy and stigma was not significant, $r(574) = .02$, n.s. Vaping (N = 657) did not show a significant positive relationship between efficacy and stigma, either $r(655) = -.007$, *n.s*. Based on the correlational results, H2 is not supported. However, to confirm these results, a regression was run to look for significant associations after covariates have been entered into the model.

The smoking regression was not significant for efficacy's prediction on stigma. Neither was the model for vaping. Overall, H2 was not supported for smoking or vaping topics. Efficacy perceptions was not associated with stigmatization.

H3: Stigma will be positively correlated with discriminatory behaviors among those who do not enact the stigmatized behavior.

Once again, Pearson's correlation and a regression were utilized to answer whether stigma was positively correlated with discriminatory behaviors. First, bivariate correlations were examined to determine whether there were any positive significant correlations between stigmatization and discrimination for either smoking or vaping topics. For smoking (N = 576),

the association between perceived stigma and discrimination was strong $r(574) = .51$, $p < .001$. However, the topic of vaping (N = 657), yielded an even stronger association between stigmatization and discrimination, $r(655) = .71$, $p < .01$. Based on these strong correlations, H3 is supported. But to double down, a regression was run to account for covariates.

For the smoking model (N = 565), stigma was significantly associated with discrimination, supporting the correlational analysis. The total model was significant $F(1, 559) = 196.343$, $p = .000$. R^2 for the model was .267, and the adjusted R^2 was .261. For the vaping model (N = 654), stigma was significantly associated with discrimination after controlling for the covariates. The total model was significant $F(1, 648) = 621.00$, $p = .000$. R^2 for the model was .52, and the adjusted R^2 was .516. Tables 39 and 40 show the standardized regression coefficients (β) for the covariates and perceived threat variable. Stigma contributed a large portion of variance on the model for discrimination, accounting for 26% (smoking) beyond the covariates, $p = .000$, and 46% (vaping) beyond the covariates, $p = .000$.

H3 is clearly supported for both smoking and vaping topics. Stigma has a strong and positive association with discriminatory behaviors.

H4: Attribution and controllability will be associated with one another.

To investigate this claim, I used basic bivariate correlations to look at the associations between controllability and each attribution item, for both smoking and vaping topics. The four attribution items were treated as individual measures for attribution of genetics (1), attribution of environment (2), attribution of stress (3), and attribution of weak character (4). The correlation tables for smoking and vaping are presented below.

Table 2

Controllability and Attribution Correlational Table (Smoking)

	Controllability	Attribution 1 (Genetics)	Attribution 2 (Environment)	Attribution 3 (Stress)	Attribution 4 (Character)
Controllability	1.0				
Attribution 1 (Genetics)	-.236**	1.0			
Attribution 2 (Environment)	.04	.03	1.0		
Attribution 3 (Stress)	.141**	.07	.359**	1.0	
Attribution 4 (Character)	.120**	.248**	.102**	.124**	1.0

N = 576
*p <.05, **p < .01

For the most part, H4 is supported for smoking. Controllability is associated with attributions of genetics (negatively), attributions of stress (positively), and attributions of weak character (positively). Controllability is not associated with attributing smoking to environment. Thus, for smoking, H4 is partially supported.

Table 3

Controllability and Attribution Correlational Table (Vaping)

	Controllability	Attribution 1 (Genetics)	Attribution 2 (Environment)	Attribution 3 (Stress)	Attribution 4 (Character)
Controllability	1.0				
Attribution 1 (Genetics)	-.338**	1.0			
Attribution 2 (Environment)	.079*	.192**	1.0		
Attribution 3 (Stress)	.100*	.151**	.385**	1.0	
Attribution 4 (Character)	.02	.452**	.280**	.236**	1.0

N = 655
*p <.05, **p < .01

H4 is partially supported for vaping, as well, although the non-significant associations are different. Controllability is associated with attributions of genetics (negatively), attributions of environment (positively), and attributions of stress (positively). Controllability is not associated with attributing vaping to weak character. The possible reasons for the differences in correlations between controllability and different attributions across smoking and vaping will be discussed later in the implication sections and generally point to some nuanced differences in the way that people perceive the two behaviors. Overall, H4 is partially supported for both behaviors, but in different ways.

RQ2: Do attribution or controllability mediate the relationship between threat messages and stigma among those who do not enact the admonished behavior?

These analyses were conducted using Hayes and Preacher's PROCESS macro, coupled with Sobel tests to differentiate full from partial mediation (Preacher & Hayes, 2008). Although I used the PROCESS macro in SPSS to run the analyses, I only utilized it as a tool for looking at the relationships between variables. In other words, I used the conceptual definitions and explanations from Baron and Kenny (1986) to guide my analyses. The analyses will start by asking whether controllability mediates the relationship between threat and stigma for smoking. To achieve mediation, three criteria must be met: 1) X variable must predict Y (path C), 2) X variable must predict M (mediator or process variable) (path A), 3) X and M variable must together predict Y variable (path C'); this includes the requirement that M predicts Y (path B), and X variable no longer predicts Y or is lessened in predicting Y (C' path). For this mediation analysis, X (threat) should predict Y (stigma), X (threat) should predict M (controllability), M (controllability) should predict Y (stigma), and X (threat) should no longer predict Y (stigma) or have lessened in its ability to predict Y (stigma) when M (controllability) is in the model.

Smoking. For this first test (does controllability mediate the relationship between threat and stigma in the smoking condition, N = 563), the overall model (including the aforementioned appropriate covariates) was not significant for threat's ability to predict stigma, thus no mediation occurred.

The second mediation was to examine attribution as a mediator between threat and stigma for smoking. However, because threat does not predict stigma for smoking, there is no mediation here, either.

Vaping. The first test of mediation for vaping (N = 657) looked at controllability as a mediator between threat and stigma. The overall model was significant for threat's prediction of stigma, $p = .00$, $R^2 = .08$. Path C (excluding the covariates) was significant for the total effect of threat on stigma, as well, $b = .17$, $t(648) = 6.25$, $p = .00$. Threat also predicted controllability (path A), $F(5, 648) = 8.51$, $p = .00$, $R^2 = .06$; $b = .11$, $t(648) = 4.28$, $p = .00$. The effect for threat and controllability together predicting stigma was significant, $F(6, 647) = 12.00$, $p = .00$, $R^2 = .10$, and controllability specifically predicted stigma, b = -.16, t(647) = -3.75, p = .00. There was still an effect of threat on stigma after the inclusion of controllability as a mediator, although less so. However, to determine whether there was partial mediation, a Sobel's test was run to test that the differences in path C and C' (with and without the mediator) was significant, $z = -2.78$. *se* = .01. $p = .01$, $\kappa^2 = -.02$. This was significant, supporting partial mediation. See Figure 10 for mediation illustration with controllability.

For the next set of mediation tests of attributions were only run if prior tests determined each predicted stigma. A required part of mediation is that the mediating variable predicts the outcome variable, so if a variable does not predict or is not associated with another, it is moot to include them for analyses. Based on this rationale, the attributions of genetics, environment, and weak character were each valid for mediation analyses (see correlation Table 32). Additionally, if the causal variable is not related to the mediator, it will not meet the requirements for mediation, either. Using this logic, the attributions considered for mediation were narrowed to environment and character. Prior to running the mediation analyses, based on the requirements for mediation, attribution based on genetics and stress were eliminated.

The first attribution mediation model for vaping (N = 657) looked at environmental attribution as a mediator between threat and stigma. The overall model was significant for

threat's prediction of stigma, $F(5,648) = 11.36$, $p = .0000$, $R^2 = .08$. The path (excluding the covariates) was significant for threat to stigma, as well, $b = .18$, $t(648) = 6.25$, $p = .00$. Threat also had effects on attribution of environment, $F(5, 648) = 10.66$, $p = .00$, $R^2 = .08$; $b = .21$, $t(648) = 4.52$, $p = .00$. The model for threat and environmental attribution both having effects on stigma was significant, $F(6, 647) = 11.21$, $p = .00$, $R^2 = .09$, and environmental attribution specifically predicted stigma, $b = .07$, $t(647) = 3.11$, $p < .00$. Even with environmental attribution as a mediator, threat's effect on stigma remained significant, $b = .16$, $t(647) = 5.65$, $p = .00$. To determine whether there was partial mediation, a Sobel's test was run to test whether the differences in path C and C' (with and without the mediator) was significant, $z = 2.52$, $se = .01$. $p = .01$, $\kappa^2 = .02$. This was significant, supporting partial mediation. In other words, the effect of threat on stigma was partially mediated by the attribution of environment for vaping. See figure 11 for illustration of environmental attribution mediation.

The final variable to test as a mediator between threat and stigma in the vaping data is attribution of weak character (N = 652). Based on the two prior tests, it is already known that the overall model was significant for threat's prediction of stigma, $F(5,646) = 11.36$, $p = .00$, $R^2 = .08$, and that threat's overall effect was significant on stigma, as well, $b = .17$, $t(648) = 6.25$, $p = .00$. Threat also had effects on attribution of weak character, $p = .00$, $R^2 = .11$; $b = .32$, $t(646) = 7.24$, $p = .00$. The paths for both threat and character attribution to stigma were also significant, $F(6, 645) = 54.75$, $p = .00$, $R^2 = .34$, and weak character attribution specifically had indirect effects on stigma, $b = .33$, $t(645) = 15.81$, $p = .00$. Even with character attribution as a mediator, threat's effect on stigma remained significant, $b = .07$, $t(645) = 2.76$, $p = .01$. To determine whether there was partial mediation, a Sobel's test was run to test whether the differences in path C and C' (with and without the mediator) were significant, $z = 6.57$, $se = .02$. $p = .00$, $\kappa^2 = .11$.

This was significant, supporting partial mediation. In other words, for vaping, the effect of threat on stigma was partially mediated by the attribution of weak character. For illustration of attribution of weak character as a mediator, see Figure 12.

H5: Controllability will mediate the relationship between efficacy and stigma toward marginalized groups.

Neither for smoking nor vaping did efficacy predict stigma. Without that requirement (X predicts Y), no mediation can occur. Therefore, H5 was not supported.

RQ3: Does attribution mediate the relationship between efficacy and stigma?

For neither smoking nor vaping did efficacy predict stigma. Thus, no attributions can mediate the relationship between efficacy and stigma. Attributions do, however, have associations with both stigma and efficacy (see Correlation Tables 32 and 33), so future work using SEM should sort out the directional relationships here.

RQ4: Is perceived responsibility for behavior better represented as two distinct variables (attribution and controllability) with independent effects or as an interaction term?

A series of multiple regressions were utilized to answer RQ4. First, covariates were entered in all models in Block 1. Then a regression was run looking at whether controllability, each of the attributions, and possible interaction terms added significantly to models predicting stigma, negative emotions, stereotypical thoughts, blame, and discrimination. Only attributions with established associations with each outcome variable were added to the models.

Smoking. In the model to predict stigma, attribution 2 and 3 (environment and stress) were not included based on the lack of any association with the outcome variable (stigma) in prior analyses. Thus, the model included covariates, controllability, attribution 1 (genetics), attribution 4 (weak character) and the interaction terms for each (N = 561). Controllability did

not significantly add to the variance. For attributions, only attribution 1 (genetics) and attribution 4 (weak character) significantly and individually added to the model. No interaction terms were significant in predicting stigma. In other words, controllability and attributions were better represented as individual variables in the model, and for this case, only two attributions were significant. This confirms earlier results.

To look at the contribution of controllability and/or attributions on negative stigma related emotions, a regression including controllability, attribution 1 (genetics), 4 (weak character), and interaction terms was run (N = 561). Controllability was not significant, but both attributions were. No interaction terms were significant.

For the contribution of controllability and/or attribution on stereotypical thoughts as an outcome, a regression was performed to test controllability, attribution 1 (genetics), attribution 2 (environment), attribution 4 (weak character), and all interaction terms (N = 561). Controllability did not significantly contribute to the variance, and neither did any of the interaction terms. However, all three attributions included in the model separately and significantly contributed to the outcome of stereotypical thoughts.

For the regression predicting blame (N = 560), only controllability, attribution 2 (environment), attribution 4 (weak character), and their interaction terms were added to the model, since correlation tables showed now association between attribution 1or 3 and blame. Controllability, attribution 2 (environment) and attribution 4 (weak character) added individual and significant variance to the model. There were no significant interactions.

Finally, to assess the contributions of controllability, attributions, and interactions on a model predicting discrimination (N = 561), covariates, controllability, attribution 1 (genetics), attribution 4 (weak character), and the interaction terms were entered into the regression. Again,

controllability did not make a significant contribution, and neither did any interaction terms. However, the two attributions (genetics and weak characters) did contribute significantly.

Vaping. To evaluate whether controllability and attributions are better treated as individual or interaction predictors for outcomes (stigma, emotion, stereotypes, blame, and discrimination), the same process was followed as for smoking. Only attributions that were associated with each outcome variable were considered in the regression for that outcome variable. Each model included controllability, selected attributions, and the interaction terms.

To assess controllability and attributions' contribution to the outcome of stigma, a model was run that included controllability, attribution 1 (genetics), attribution 2 (environment), attribution 4 (character) and interaction terms for each (N = 650). All entries were significant except for the interaction terms, none of which were.

For the outcome of emotion (N = 651), controllability, attribution 1 (genetics), attribution 2 (environment), attribution 4 (weak character), and all interaction terms were entered into the model. All three attributions made individual significant contributions to the model, but controllability and the interaction terms did not.

The model for stereotypical thoughts (N = 650) included covariates, controllability and attributions of genetics (1), environment (2), and weak character (4), as well as the interaction terms. Again, controllability and the interaction terms failed to make significant contributions, but all individual attributions did contribute significantly.

For the model with blame as an outcome (N = 647), controllability, attribution of genetics (1), attribution of weak character (4), and interaction terms were put into the regression. Controllability and both attributions were significant, but only the interaction between attribution of weak character and controllability perceptions was significant.

Finally, the contribution of controllability, attribution, and interactions between the two were assessed for the outcome of discrimination. In this regression, controllability, attribution 1 (genetics), attribution 4 (weak character), and the interaction terms were entered into the model (N = 647). Controllability and both attribution made individual and significant contributions to the model, although the interaction terms did not.

Two answer RQ4, the first observation to note is that whether controllability contributes directly to each outcome variable both depends on the outcome variable, as well as the topic (smoking or vaping). The same observation is seen with attribution; different attributions contribute to different outcomes based on the topic. Although this is not a "tidy" answer, it does expose the complexity of how people assign responsibility based on the behavior and how responsibility contributes differently to various outcomes related to stigma. Therefore, examining the nuances in how these constructs are related to one another and how people assign controllability and different attributions based on the behavior is ripe for future research.

What pattern did emerge, however, was the lack of significant interaction terms; there were none. Regardless of the topic or the outcome, no interaction terms for any combination of control and attribution were significant. It would appear, then, that each of these, although related, should be treated as its own predictor variable because contribution to models was only observed for independent predictors, not for any interactions between them. Future research using SEM should still use latent contrast modeling to explore whether these variables are measuring different dimensions of a larger construct (responsibility), or whether each represents its own unique type of responsibility assignment. For the purpose of RQ4 in this dissertation, we can say that controllability and each of the attributions, although correlated, contribute to outcomes as individual constructs.

H6: Stigma will be positively associated with blame for a person's current or future negative outcome.

To test this hypothesis, first the correlations were examined for association and strength. To further examine these relationships, multiple regression was employed to account for covariates and investigate model associations. For full correlation results, please see Table 32 and 33, which display all correlations from the data for smoking and vaping.

Smoking. For smoking, the correlation between stigma and blame was positive and significant, $r = .106$. A multiple regression for smoking (N = 564) was run to control for covariates and examine the contribution stigma made toward the blame for a person's current or future negative health outcomes. The model was significant, $F(1,558) = 8.28$, $p = .00$, *Adj.* $R^2 = .01$. It was also in the predicted direction; stigma was positively associated with blame, $b = .16$, $t(558) = 2.88$, $p = .00$. For smoking, H6 is supported.

Vaping. The correlation between stigma and blame for vaping was also positive and significant ($p < .01$), although there was a slightly stronger correlation compared to smoking, $r = .164$. A multiple regression for vaping (N = 650) was run to control for covariates and examine the contribution stigma made toward the blame for a person's current or future negative health outcomes. The model was significant, $F(1,644) = 15.33$, $p = .00$, *Adj.* $R^2 = .03$. It was also in the predicted direction; stigma was positively associated with blame, $b = .19$, $t(644) = 3.92$, $p = .00$. For vaping, H6 is supported.

H7: Blame will be positively associated with discriminatory behaviors.

The same procedure was utilized to test H7 as was used to test the previous hypothesis (H6). First, the correlations were examined for association and strength. To further examine these relationships, multiple regressions were employed to control for covariates and investigate

associations of interest, in this case blame and discriminatory behaviors. For full correlation results, please see Table 32 and 33, which display all correlations from the data for smoking and vaping.

Smoking. For smoking, the correlation between blame and discrimination was positive and significant, $r = .308$, $p < .01$. A multiple regression for smoking (N = 564) was run to control for covariates and examine the association between blame and discriminatory behaviors toward people who smoke. The model was significant, $F(1,558) = 59.92$, $p = .00$, *Adj.* $R^2 = .10$. It was also in the predicted direction; stigma was positively associated with blame, $b = .28$, $t(558) = 7.74$, $p = .00$. For smoking, H7 is supported.

Vaping. The correlation between blame and discrimination for vaping was also positive and significant $r = .30$, $p < .01$. A multiple regression for vaping (N = 650) was run to control for covariates and examine the contribution blame made toward discrimination. The model was significant, $F(1,644) = 58.23$, $p = .00$, *Adj.* $R^2 = .13$. It was also in the predicted direction; stigma was positively associated with blame, $b = .29$, $t(644) = 7.63$, $p = .00$. For vaping, H7 is supported.

RQ1: Is stigma adequately measured with the validated scale or does adding stereotypical cognitions and emotions add additional variance?

To explore RQ1, I wanted to determine whether emotions and stereotypical thoughts contributed to the outcomes of blame and discrimination above and beyond the traditional stigma measure. I was also curious as to whether an interaction term between emotions and stereotypes would better represent these two variables as a contingent construct. In a multiple step-wise regression, I put the covariates in block 1, traditional stigma measure in block 2, negative stigma-related emotions in block 3, stereotypical thoughts in block 4, and the interaction term (emotions

X stereotypes) in block 5. I first ran this model with an outcome variable of blame, and then I ran the model for the outcome of discrimination.

Smoking. For smoking (N = 564), stigma significantly contributed to the model for blame, $F(1,558) = 8.28$, $p = .00$, *Adj.* $R^2 = .01$. However, the model was significantly improved by the addition of emotions, $F(1,557) = 26.15$, $p = .00$, *Adj.* $R^2 = .06$, increasing the variance by just over 4%. The model was further improved by adding stereotypical thoughts, $F(1,556) = 16.91$, $p = .00$, *Adj.* $R^2 = .08$, increasing the variance by an additional 3%. The interaction term was not significant, $F(1,555) = 1.22$, $p = .27$, *Adj.* $R^2 = .08$. Overall, adding emotion and stereotypical thoughts improved the model's variance from approximately 1% to just over 8%. Betas and additional R^2 information in in the tables section.

Stigma also significantly contributed to the model for discrimination (N = 565), $F(1,559) = 196.34$, $p = .000$, *Adj.* $R^2 = .26$. However, the model was significantly improved by the addition of emotions, $F(1,558) = 104.28$, $p = .00$, *Adj.* $R^2 = .38$, increasing the variance by 11.5%. The model was further improved by adding stereotypical thoughts, $F(1,557) = 29.15$, $p = .00$, *Adj.* $R^2 = .41$, increasing the variance by an additional 3%. The interaction term was not significant, $F(1,556) = .21$, $p = .27$, *Adj.* $R^2 = .40$. Overall, adding emotion and stereotypical thoughts improved the model's variance from approximately 26% to just over 40%.

Vaping. For vaping (N = 649), stigma significantly contributed to the model for blame, $F(1,643) = 15.31$, $p = .00$, *Adj.* $R^2 = .03$. However, the model was significantly improved by the addition of emotions, $F(1,642) = 11.29$, $p = .00$, *Adj.* $R^2 = .05$, increasing the variance by about 1.5%. The model was further improved by adding stereotypical thoughts, $F(1,641) = 17.58$, $p = .00$, *Adj.* $R^2 = .07$, increasing the variance by an additional 2.5%. The interaction term was not

significant, $F(1,640) = 1.72$, $p = .19$, *Adj.* $R^2 = .07$. Overall, adding emotion and stereotypical thoughts improved the model's variance from approximately 3% to just over 7%.

Stigma also significantly contributed to the model for discriminatory behaviors (N = 653), $F(1,647) = 620.31$, $p = .00$, *Adj.* $R^2 = .52$. However, the model was significantly improved by the addition of emotions, $F(1,646) = 54.75$, $p = .00$, *Adj.* $R^2 = .55$, increasing the variance by just shy of 4%. The model was further improved by adding stereotypical thoughts, $F(1,645) = 45.96$, $p = .000$, *Adj.* $R^2 = .58$, increasing the variance by another additional 3%. The interaction term was not significant, $F(1,644) = .2.53$, $p = .11$, *Adj.* $R^2 = .58$. Overall, adding emotion and stereotypical thoughts in addition to the traditional stigma measure improved the model's variance from approximately 52% to just over 58%.

Based on these analyses, models to predict blame and discrimination account for more variance when negative stigma-related emotions and stereotypical thoughts are included in addition to the stigma scale. This may point to a measure that, although it works well, may be excluding some important aspects of stigma, theoretically. This will be further discussed in the next chapter.

H8: Threat, efficacy, responsibility, and stigma will all predict blame.

To determine whether all constructs belong in a model predicting blame, all variables were entered into a regression model. Block 1 consisted of covariates, both controllability and all four attributions were introduced in Block 2, Block 3 contained both the traditional stigma measure, as well as the measures for negative emotions and stereotypes. The model was significant for smoking. All variables did, indeed, contribute to the variance for the outcome of blame. For vaping, the full model was also significant. In all, it appears that all proposed variables do, in fact, contribute to the variance of blame.

H9: Threat, efficacy, responsibility, stigma, and blame will all predict discrimination.

To confirm that all predictor variables contributed to discrimination, all covariates, responsibility-related constructs, stigma-related constructs, and blame were entered into a step-wise regression. The blocks were the same as the blame model, except a Block 4 was added for blame, and discrimination was the outcome variable. The model was significant. Like the model for blame, a similar pattern emerged in which some variables lost significance when others were introduced into the model. This may point to mediation, which should be explored further using structural equation modeling. However, overall, H9 was supported. Unfortunately, there is no "easy" way to determine the causal order of these variables without structural equation modeling. However, it can at least be verified that each of the predictors discussed in this dissertation do, in fact, work together to predict a host of outcomes, ultimately including discrimination.

H10: High internal LOC persons will perceive personal responsibility (attribution and control), stigma, blame, and discrimination to a greater degree than those who possess high external LOC.

A series of univariate analyses were run to determine whether locus of control dictated any differences in responses between personal responsibility (attribution and control), stigma, emotions, stereotypes, blame, and discrimination. Each outcome received its own ANOVA for LOC, and η^2s were calculated for significant results.

Smoking. To examine differences of attributions between internal and external LOC orientation, each attribution received its own ANOVA. The first one-way ANOVA for LOC indicated no significant differences in attribution of genetics, $F = 1.55$, $df\,(1,572)$, $p = .21$. No differences were found between the internal LOC group ($M = 2.06$, $SD = 1.37$) and the external LOC group ($M = 2.21$, $SD = 1.45$). It is worth noting that neither group's mean came close to the

midpoint; both means were low demonstrating low attribution to genetics for the up taking of smoking.

The one-way ANOVA for differences in attribution of environment showed no significant differences between LOC orientations, $F = 1.11$, df (1,572), $p = .35$. No differences were found between the internal LOC group ($M = 5.37$, $SD = 1.52$) compared to the external LOC group ($M = 5.48$, $SD = 1.43$).

The one-way ANOVA for differences in attribution of stress showed no significant differences between LOC orientations, $F = .28$, df (1,571), $p = .60$. No differences were found between the internal LOC group ($M = 5.11$, $SD = 1.45$) and the external LOC group ($M = 5.17$, $SD = 1.47$).

The one-way ANOVA for differences in attribution of weak character showed no significant differences between LOC orientations, $F = .3.45$, df (1,571), $p = .06$. No differences were found between the internal LOC group ($M = 3.7$, $SD = 1.78$) and the external LOC group ($M = 3.4$, $SD = 1.76$).

The one-way ANOVA for mean differences between internal and external LOC on the measure of controllability was significant, $F = .6.30$, df (1,572), $p = .01$, $\eta^2 = .011$). The internal LOC group had greater controllability scores ($M = 6.24$, $SD = .94$) than did the external LOC group ($M = 6.02$, $SD = 1.15$). This result should note two observations: first, both internal and external LOC groups perceived controllability as high, the means for both groups falling well above the midpoint; second, the effect size here is very small, likely due to a ceiling effect and high means for both groups.

The test for differences between internal and external LOC groups' scores on stigma was not significant, $F = .00$, df (1,574), $p = 1.0$ No differences were found between the internal LOC group ($M = 3.68$, $SD = 1.00$) and the external LOC group ($M = 3.68$, $SD = 1.05$). η

A one-way ANOVA was also run for each of the new additions to predicting stigma, emotions and stereotypical thoughts. For emotions, there was no significant difference between internal LOC and external LOC groups, $F = .39$, df (1,574), $p = .53$; $M = 3.12$, $SD = 1.67$; $M = 3.21$, $SD = 1.60$). People with internal LOC had no more or less negative emotions toward people who smoke than did people with an external LOC. For stereotypical thoughts, there were also no significant results, $F = .39$, df (1,574), $p = .53$). People with an internal LOC had no more or less stereotypical thought endorsement ($M = 3.84$, $SD = 1.34$) than did people with an external LOC ($M = 3.81$, $SD = 1.31$).

Finally, one-way ANOVAs were run for each blame and discrimination. The results for blame proved to be significant, although small for effect size, $F = 19.183$, df (1/573), $p = .00$, $\eta^2 = .03$). People who scored high on internal LOC assigned significantly more blame ($M = 5.46$, $SD = 1.26$) than did people with external LOC ($M = 4.97$, $SD = 1.44$). Discrimination, on the other hand, was not significant, $F = .35$, df (1,574), $p = .56$); there were no differences observed between internal LOC ($M = 3.88$, $SD = 1.22$) and external LOC ($M = 3.82$, $SD = 1.23$).

Vaping. To examine differences of attributions between internal and external LOC orientation, each attribution received its own ANOVA. The first one-way ANOVA for LOC indicated no significant differences in attribution of genetics ($F = 1.19$, df (1,654), $p = .28$). No differences were found between the internal LOC group ($M = 1.83$, $SD = 1.25$) than the external LOC group ($M = 1.94$, $SD = 1.40$). It is worth noting that neither group's mean came close to the

midpoint; both means were extremely low potentially indicating that people, on the whole, did not attribute genetics to the initiation of vaping.

The one-way ANOVA for differences in attribution of environment showed no significant differences between LOC orientations, $F = 1.11$, df (1,655), $p = .29$. No differences were found between the internal LOC group ($M = 4.35$, $SD = 1.84$) compared to the external LOC group ($M = 4.51$, $SD = 1.81$).

The one-way ANOVA for differences in attribution of stress showed no significant differences between LOC orientations, $F = 1.86$, df (1,655), $p = .17$. No differences were found between the internal LOC group ($M = 4.58$, $SD = 1.62$) and the external LOC group ($M = 4.75$, $SD = 1.50$).

The one-way ANOVA for differences in attribution of weak character showed no significant differences between LOC orientations $F = .19$, df (1,652), $p = .66$). No differences were found between the internal LOC group ($M = 3.16$, $SD = 1.77$) and the external LOC group ($M = 3.22$, $SD = 1.78$).

The one-way ANOVA for mean differences between internal and external LOC on the measure of controllability was significant, $F = 7.38$, df (1,655), $p = .01$, $\eta^2 = .01$). The internal LOC group had greater controllability scores ($M = 6.37$, $SD = 1.00$) than did the external LOC group ($M = 6.14$, $SD = 1.06$). This result should note two observations: first, both internal and external LOC groups perceived controllability as high, the means for both groups falling well above the midpoint; second, the effect size here is very small, likely due to a ceiling effect and high means for both groups. This is the same pattern as in the smoking one-way ANOVAs for differences in perceived controllability based on LOC.

The test for differences between internal and external LOC groups' scores on stigma approached significance, $F = 1.893$, df (1,655), $p = .051$. The internal LOC group had greater controllability scores ($M = 3.29$, $SD = 1.07$) than did the external LOC group ($M = 3.17$, $SD = 1.15$). Although this was not significant, it supports the idea that people who believe that one's fate is purely their own would be more likely to stigmatize others.

A one-way ANOVA was also run for each of the new additions to predicting stigma, emotions and stereotypical thoughts. For emotions, there was no significant difference between internal LOC and external LOC groups, $F = 1.52$, df (1,655), $p = .22$; $M = 2.41$, $SD = 1.52$; $M = 2.56$, $SD = 1.614$). People with internal LOC had no more or less negative emotions toward people who smoke than did people with an external LOC. For stereotypical thoughts, there were also no significant results, $F = .02$, df (1,654), $p = .89$). People with an internal LOC had no more or less stereotypical thought endorsement ($M = 3.57$, $SD = 1.44$) than did people with an external LOC ($M = 3.58$, $SD = 1.48$).

Finally, one-way ANOVAs were run for each blame and discrimination. The results for blame proved to be significant, although small for effect size, $F = 17.31$, df (1/651), $p = .000$, $\eta^2 = .03$. People who scored high on internal LOC assigned significantly more blame ($M = 5.61$, $SD = 1.23$) than did people with external LOC ($M = 5.17$, $SD = 1.48$). Discrimination, for vaping, was also significant, $F = 8.36$, df (1,655), $p = .01$, $\eta^2 = .01$) such that people who scored high on internal LOC assigned significantly more blame ($M = 3.72$, $SD = 1.31$) than did people with external LOC ($M = 3.41$, $SD = 1.45$).

Overall, H10 was only partially supported for both smoking and vaping topics. In both topics, there was no significant differences between internal and external LOC on any attribution, emotion, or stereotypical thoughts. In the smoking condition, stigma and

discrimination were also non-significant, leaving both controllability and blame as significant results. A similar pattern was observed for vaping; stigma approached significance, but controllability, blame, and discrimination were all significant. From a broad view, people with internal LOC are more likely to perceive controllability as a personal issue and blame people who smoke or vape for their own negative outcomes from the behavior. Vaping may be slightly different because many people are still learning about it, whereas smoking and its risks are well-known. When considering vaping, people with internal LOC are more likely to stigmatize and discriminate against those who vape compared to people with an external LOC.

RQ5: What differences in assessment exist between threat and efficacy perceptions, personal responsibility (attribution and control), stigma, blame, and discrimination depending on ethnicity, education, or income?

For investigating differences on various outcome variables based on ethnicity and SES, a series of one-way ANOVAs with Tukey post hoc tests were utilized. SES is comprised of both education and income, so both education and income were examined individually. Only significant differences will be reported here.

Smoking

Race/ethnicity. There were no significant differences of threat or efficacy perceptions between racial categories. There were also no significant differences for controllability, attribution 1 (genetics), attribution 2 (environment), attribution 3 (stress), emotions, or blame.

Differences did emerge for attribution 4 (weak character) ($F = 2.278$, df (5,567), $p = .05$, $\eta^2 = .02$). However, this difference between Latinos and Whites is very weak. It, however, points to Latinos attributing the initiation of smoking to weak character ($M = 4.50$, $SD = 2.01$) more than Whites ($M = 3.52$, $SD = 1.72$).

Further differences emerged between races for stigma, as well ($F = 4.52$, df (5,570), $p = .00$, $\eta^2 = .04$). Blacks were less likely to stigmatize ($M = 3.27$, $SD = 1.14$) than were Asians ($M = 4.13$, $SD = 1.15$). Additionally, those who reported being multi-racial also reported lower stigma scores than Asians ($M = 3.17$, $SD = .76$), although multi-racial scores and Black scores did not differ. There were no other significant differences between racial categories for stigma.

Differences in stereotype endorsement were observed based on self-reported race ($F = 3.11$, df (5,570), $p = = .01$, $\eta^2 = .03$) such that Latinos ($M = 4.30$, $SD = 1.27$) reported greater stereotype endorsement than Blacks did ($M = 3.31$, $SD = 1.17$).

Finally, there were differences in discriminatory behaviors based on race ($F = 2.37$, df (5/570), $p = .04$, $\eta^2 = .02$). However, the only significant difference was between those reporting multi-racial and Asian ethnicities. Asians were more likely to discriminate ($M = 4.38$, $SD = 1.17$) than were multi-racial people ($M = 3.33$, $SD = 1.22$). Differences between Blacks and Asians did near significance, with Asians scoring higher on discrimination than Blacks ($M = 3.55$, $SD = 1.12$).

Overall, the differences between self-reported racial categories were inconsistent and varied. Implications for these results will be discussed in the next chapter.

Education. There were no significant differences in perceptions of threat, efficacy, controllability, attribution of genetics, attribution of stress, attribution of character, emotions, or blame based on education. However, there were significant differences between levels of education for attribution of environment ($F = 2.74$, df (3,567), $p = .04$, $\eta^2 = .01$). People with some college ($M = 5.24$, $SD = 1.60$) scored significantly less than people with graduate degrees ($M = 5.71$, $SD = 1.57$) on how much attribution was assigned to one's environment. There was also a significant difference between stigma assignment ($F = 4.35$, df (3,569), $p = .01$, $\eta^2 = .02$).

Those with some college (M = 3.52, SD =1.04) were significantly less stigmatizing than those with a college degree (M = 3.79, SD = 1.03). Differences on stereotype endorsement were also present with different levels of education (F = 3.90, df (3,569), p = .01, η^2 = .02). People with only a high school degree or GED (M =3.34, SD = 1.22) endorsed stereotypes significantly *less* than people with a graduate degree (M = 4.07, SD = 1.27). Finally, there were differences between average discrimination scores based on education (F = 3.31, df (3,569), p = .02, η^2 = .02). People with a college degree (M = 4.01, SD = 1.29) were more likely to endorse discriminatory behaviors than people with a high school diploma or GED (M = 3.46, SD = 1.15).

Income. Threat approached significance for differences between income levels, but was just out of the p = .05 cutoff. None of the four attributions, stigma, emotions, stereotypes, blame, or discrimination had any significant differences based on income. Efficacy, however, perceptions did vary by income (F = 3.36, df (4,565), p = .01, η^2 = .02). Controllability did significantly differ based on income (F = 3.06, df (4,563), p = .02, η^2 = .02) such that people who reported <$25,000 household income per year (M = 5.85, SD = 1.31) perceived less controllability that people who made $50-75,000 per year ($M$ = 6.23, SD = .93) and people who made $75-100,000 per year ($M$ =6.32, SD = .716). Overall, people who scored differently on different measures tended to be at the low and high ends of the income spectrum.

Vaping

Race/ethnicity. No differences emerged for any outcome variables based on self-reported race/ethnicity.

Education. There were no significant differences based on education levels for the variables of perceived efficacy, controllability, attribution to genetics, attribution to stress, attribution to weak character or blame.

The amount of perceived threat differed based on educational levels ($F = 2.52$, df (4,652), $p = .04$, $\eta^2 = .02$). Tukey post hoc tests ($p < .05$) revealed differences such that with graduate degrees perceived higher threat ($M = 5.47$, $SD = 1.33$) than did those with some college ($M = 4.95$, $SD = 1.54$) or a college degree ($M = 4.97$, $SD = 1.48$). Some college and college degree did not differ from one another.

Attribution to environment was more strongly endorsed by those with a graduate degree ($M = 4.93$, $SD = 1.63$) than by those with a high school education ($M = 4.12$, $SD = 2.02$) or some college ($M = 4.19$, $SD = 1.90$) ($F = 4.78$, df (4,652), $p = .01$, $\eta^2 = .03$). No other differences were observed.

Stigma outcomes did vary based on education levels, as well ($F = 2.52$, df (5,652), $p = .04$, $\eta^2 = .02$), but only between some college ($M = 3.10$, $SD = 1.08$) and graduate degree ($M = 3.49$, $SD = 1.01$). Those with graduate degrees were more likely to stigmatize than those with some college.

Both of the suggested new components to stigma, emotions and stereotype endorsement, had differences based on educational levels. For emotions ($F = 2.89$, df (4,652), $p = .02$, $\eta^2 = .02$), people with graduate degrees reported significantly more negative emotions toward people who vape ($M = 2.91$, $SD = 1.72$) than did people with some college ($M = 2.36$, $SD = 1.49$) or people with a college degree only ($M = 2.42$, $SD = 1.52$). It is important to note that the negative emotion means were fairly low, all falling below the midpoint of the scale. The same was not true with the stereotype endorsement means, which varied around the midpoint. This measure also had significant differences based on educational level ($F = 5.35$, df (4,651), $p = .000$, $\eta^2 = .03$). People with graduate degrees had higher stereotype scores ($M = 4.04$, $SD = 1.21$) than did

those with a high school degree or GED (M = 3.13, SD = 1.49) and those with some college (M = 3.38, SD = 1.41).

Finally, discrimination toward people who vape differed based on education (F = 6.53, df (4,652), p = .00, η^2 = .04) such that those with a graduate degree scored higher on the discriminatory behavior measure (M = 4.13, SD = 1.34) than did those with a high school diploma or GED (M = 3.34, SD = 1.22), those with some college (M = 3.35, SD = 1.22), and a terminal college degree (M = 3.63, SD = 1.44).

Although it does not hold in every case, it seems that for some stigma and stigma-related variables, scores go up as educational acquirement does.

Income. There were no significant differences based on income levels for the variables of perceived efficacy, controllability, attribution to genetics, attribution to stress, attribution to weak character or blame.

The amount of perceived threat differed based on income (F = 5.85, df (4,652), p = .00, η^2 = .03). Tukey post hoc tests ($p < .05$) revealed differences such that those with incomes of <$25,000 per year perceived lower threat (M =4.69, SD = 1.63) than did those with incomes between $50-75,000 ($M$ = 5.39, SD = 1.30) or $75-100,000 ($M$ = 5.33, SD = 1.42). Additionally, people who earned $25-50,000 per year ($M$ = 4.85, SD = 1.60) rated threat lower than people who earned $50-75,000 per year. Efficacy, however, had no differences based on income.

There were no differences between income levels on the variable of controllability, attribution to genetics, attribution to environment, or attribution to stress. However, attribution of weak character was significant. Attribution to weak character was more strongly endorsed by those who made $75-100,000 ($M$ = 3.73, SD = 1.91) than by those who made <$25,000 per year

(M = 2.91, SD = 1.86) or $25-50,000 ($M$ = 2.95, SD = 1.66) (F = 4.70, df (4,649), p = .00, η^2 = .03). No other differences were observed for attribution of character.

Stigma outcomes did vary based on income levels (F = 4.28, df (4/652), p = .00, η^2 = .03), but only between $25-50,000 ($M$ = 3.07, SD = 1.06) and $50-75,000 ($M$ = 3.42, SD = 1.07). Those with in the higher income bracket were more likely to stigmatize.

Of the suggested new components to stigma, emotions did not differ based on income, but stereotype endorsement did. People who made more than $100,000 per year ($M$ = 3.91, SD = 1.37) had higher stereotype endorsement scores than people who made $25-50,000 per year ($M$ = 3.37, SD = 1.40; F = 3.43, df (4,651), p = .01, η^2 = .02).

Finally, blame approached significance, but did not quite reach it, but discrimination toward people who vape did differ based on income (F = 9.39, df (4,652), p = .00, η^2 = .06) such that those with who made <$25,000 per year ($M$ = 3.19, SD = 1.46) discriminated significantly less than did those in the $50-75,000 group ($M$ = 3.94, SD = 1.24), the $75-100,000 group ($M$ = 3.88, SD = 1.40), and the $100,000+ group ($M$ = 3,93, SD = 1.38). Further, those in the $25-50,000 ($M$ = 3.34, SD = 1.29) group had significantly higher scores on discriminatory behaviors than did those in the $50-75,000 group ($M$ = 3.94, SD = 1.24), the $75-100,000 group ($M$ = 3.88, SD = 1.40), and the $100,000+ group ($M$ = 3,93, SD = 1.38). No other differences emerged, although a fairly clear pattern is visible here; those in lower income brackets discriminate less than those in upper income brackets.

Conclusion

In all, a potential trend is outlined in these results; although not every outcome had observed differences based on income, those who do showed a fairly clear tendency for lower

income brackets to have lower means on a host of stigma and stigma-related variables than do higher income brackets.

Table and Figures

Below are tables and figures that briefly outline all hypotheses/research questions, variables, measures, statistics, and findings.

Table 4

Summary of Hypotheses/Research Questions and Findings

Hypotheses/Research Question	**Variables**	**Measures***	**Statistic**	**Findings***
H1: Messages high in threat will be positively associated with stigmatization of those who enact the threatening behavior.	Covariates: age, education, income IV's/DV's: Threat, Stigma	Risk Behavior Diagnostic Scale; Threat as a combination of severity and susceptibility; (Witte, Cameron, McKeon, & Berkowitz, 1996)	Pearson correlations; multiple regression	Smoking: Not supported Vaping: Supported
H2: Messages that include efficacy will be positively associated with stigmatization of those who enact the admonished behavior.	Covariates: age, education, income IV's/DV's: Efficacy, Stigma	Risk Behavior Diagnostic Scale; Efficacy as a combination of self- and response-efficacy; (Witte, Cameron, McKeon, & Berkowitz, 1996); Stigma Beliefs Measure (adapted from Link et al., 1989)	Pearson correlations; multiple regression	Smoking: Not supported Vaping: Not supported

Table 4, cont.

Hypotheses/Research Question	**Variables**	**Measures***	**Statistic**	**Findings***
H3: Stigma will be positively correlated with discriminatory behaviors among those who do not enact the stigmatized behavior.	Covariates: age, education, income IV's/DV's: Stigma, Discrimination	Stigma Beliefs Measure (adapted from Link et al., 1989); Discrimination (LaVoie, 2016)	Pearson correlations; multiple regression	Smoking: Supported Vaping: Supported
H4: Attribution and controllability will be associated with one another.	Controllability and attribution (each of the four)	Adapted from attribution (Stuber, Galea, & Link, 2008); Controllability (modified from Smith, 2012)	Bivariate correlations	Smoking: partially supported Vaping: partially supported
RQ2: Do attribution or controllability mediate the relationship between threat messages and stigma among those who do not enact the admonished behavior?	Perceived threat, stigma, controllability, attribution	Risk Behavior Diagnostic Scale; Threat as a combination of severity and susceptibility; (Witte, Cameron, McKeon, & Berkowitz, 1996); Stigma Beliefs Measure (adapted from Link et al., 1989); Attribution modified (Stuber, Galea, & Link, 2008); Controllability (modified from Smith, 2012)	Bivariate Correlation; Mediation using Hayes PROCESS macro	Smoking: NA/not supported (no correlation); Vaping: Partial support (partial mediation for controllability, environmental attribution, and weak character attribution)
H5: Controllability will mediate the relationship between efficacy and stigma toward marginalized groups.	Perceived efficacy, stigma, controllability	Covariates: age, education, income IV's/DV's: Threat, Stigma	Bivariate correlation; Mediation using Hayes PROCESS macro	Smoking: Not supported (no correlation) Vaping: Not supported (no correlation)
RQ3: Do attribution(s) mediate the relationship between efficacy and stigma?	Perceived efficacy, stigma, attribution	Risk Behavior Diagnostic Scale; Efficacy as a combination of self- and response-efficacy; (Witte, Cameron, McKeon, & Berkowitz, 1996); Stigma Beliefs Measure (adapted from Link et al., 1989); Attribution modified (Stuber, Galea, & Link, 2008)	Bivariate correlation; Mediation using Hayes PROCESS macro	Smoking: Not supported (no correlation) Vaping: Not supported (no correlation)

Table 4, cont.

Hypotheses/Research Question	**Variables**	**Measures***	**Statistic**	**Findings***
RQ4: Is perceived responsibility for behavior better represented as two distinct variables (attributional causes and controllability) with independent effects or as an interaction term between various attributions and controllability)?	Covariates: age, education, income IV's/DV's: controllability, attribution, stigma, negative emotions, stereotypical thoughts, blame, discrimination	Controllability (modified from Smith, 2012); Attribution modified (Stuber, Galea, & Link, 2008); Stigma Beliefs Measure (adapted from Link et al., 1989); Negative emotions (adapted from Weiner, 2006); Stereotypes (LaVoie, 2016); Blame (modified from Smith, 2012); Discrimination (LaVoie, 2016)	Multiple regression	Smoking: independent effects of attributions better for DV of stigma; independent effects of attributions better for DV of negative emotions; independent effects of attributions better for DV of stereotypical thoughts; independent effects of controllability and attributions better for DV of blame; independent effects of attribution better for DV of discrimination. Vaping: independent effects of controllability and attributions better for DV of stigma; independent effects of attributions better for DV of negative emotions; independent effects of attributions better for DV of stereotypical thoughts; independent effects of controllability and attributions better for DV of blame; independent effects of controllability and attribution better for DV of discrimination.

Table 4, cont.

Hypotheses/Research Question	**Variables**	**Measures***	**Statistic**	**Findings***
H6: Stigma will be positively associated with blame for a person's current or future negative outcome.	Covariates: age, education, income IV's/DV's: Stigma, Blame	Stigma Beliefs Measure (adapted from Link et al., 1989); Blame (modified from Smith, 2012)	Pearson Correlations; Regression	Smoking: Supported Vaping: Supported
H7: Blame will be positively associated with discriminatory behaviors.	Covariates: age, education, income IV's/DV's: Blame, Discrimination	Blame (modified from Smith, 2012); Discrimination (LaVoie, 2016)	Pearson Correlations; Regression	Smoking: Supported Vaping: Supported
RQ1: Is stigma adequately measured with the validated scale or does adding stereotypical cognitions and emotions add additional variance?	Covariates: age, education, income; IVs/DVs: Stigma, negative emotions, stereotypical thoughts; blame, discrimination	Stigma Beliefs Measure (adapted from Link et al., 1989); Negative emotions (adapted from Weiner, 2006); Stereotypes (LaVoie, 2016); Blame (modified from Smith, 2012); Discrimination (LaVoie, 2016)	Step-wise regression	Smoking: blame and discrimination models were both improved by adding emotions and stereotypes in addition to stigma; Vaping: blame and discrimination models were both improved by adding emotions and stereotypes in addition to stigma
H8: Threat, efficacy, responsibility, and stigma will all predict blame.	Covariates: age, education, income; IVs/DVs: threat, stigma, controllability, attributions, negative emotions, stereotypical thoughts; blame	Risk Behavior Diagnostic Scale; Threat as a combination of severity and susceptibility; (Witte, Cameron, McKeon, & Berkowitz, 1996), Controllability (modified from Smith, 2012); Attribution modified (Stuber, Galea, & Link, 2008); Stigma Beliefs Measure (adapted from Link et al., 1989); Negative emotions (adapted from Weiner, 2006); Stereotypes (LaVoie, 2016); Blame (modified from Smith, 2012)	Multiple regression	Smoking: Supported Vaping: Supported

Table 4, cont.

Hypotheses/Research Question	**Variables**	**Measures***	**Statistic**	**Findings***
H9: Threat, efficacy, responsibility, stigma, and blame will all predict discrimination.	Covariates: age, education, income; IVs/DVs: threat, stigma, controllability, attributions, negative emotions, stereotypical thoughts; blame, discrimination	Risk Behavior Diagnostic Scale; Threat as a combination of severity and susceptibility; (Witte, Cameron, McKeon, & Berkowitz, 1996), Controllability (modified from Smith, 2012); Attribution modified (Stuber, Galea, & Link, 2008); Stigma Beliefs Measure (adapted from Link et al., 1989); Negative emotions (adapted from Weiner, 2006); Stereotypes (LaVoie, 2016); Blame (modified from Smith, 2012); Discrimination (LaVoie, 2016)	Multiple regression	Smoking: Supported Vaping: Supported
H10: High internal LOC persons will perceive personal responsibility (attribution and control), stigma, blame, and discrimination to a greater degree than those who possess high external LOC.	IV: LOC DVs: attribution, controllability, stigma, negative emotions, stereotypical thoughts, blame, discrimination	Locus of Control (Rotter, 1966); Controllability (modified from Smith, 2012); Attribution modified (Stuber, Galea, & Link, 2008); Stigma Beliefs Measure (adapted from Link et al., 1989); Negative emotions (adapted from Weiner, 2006); Stereotypes (LaVoie, 2016); Blame (modified from Smith, 2012); Discrimination (LaVoie, 2016)	Series of univariate analyses	Smoking: partially supported (only controllability and blame) Vaping: partially supported (only controllability, stigma, blame, and discrimination)

Table 4, cont.

Hypotheses/Research Question	Variables	Measures*	Statistic	Findings*
RQ5: What differences in assessment exist between threat and efficacy perceptions, personal responsibility (attribution and control), stigma, blame, and discrimination depending on ethnicity, education, or income?	IVs: ethnicity, education, income DVs: Threat, efficacy, attribution, controllability, stigma, negative emotions, stereotypical thoughts, blame, discrimination	Demographic measures (LaVoie, 2016); Risk Behavior Diagnostic Scale; Threat as a combination of severity and susceptibility and efficacy as a combination of self- and response-efficacy (Witte, Cameron, McKeon, & Berkowitz, 1996), Controllability (modified from Smith, 2012); Attribution modified (Stuber, Galea, & Link, 2008); Stigma Beliefs Measure (adapted from Link et al., 1989); Negative emotions (adapted from Weiner, 2006); Stereotypes (LaVoie, 2016); Blame (modified from Smith, 2012); Discrimination (LaVoie, 2016)	Series of univariate analyses for each IV	Smoking - Based on ethnicity: Differences in weak character attribution, stigma, stereotypical thoughts, and discrimination. Based on education: Differences in environmental attribution, stigma, stereotypical thoughts, and discrimination. Based on income: Differences in perceived efficacy, controllability. Vaping – Based on ethnicity: no differences. Based on education: Differences in perceived threat, environmental attribution, stigma, negative emotions, stereotypical thoughts, discrimination. Based on income: Differences in perceived threat, attribution of weak character, stigma, stereotypical thoughts, blame, and discrimination.

Note. All measures were 1 – 7, with 1 = least agreement/strength to 7 = most agreement/strength. All findings reported were significant at the $p < .05$

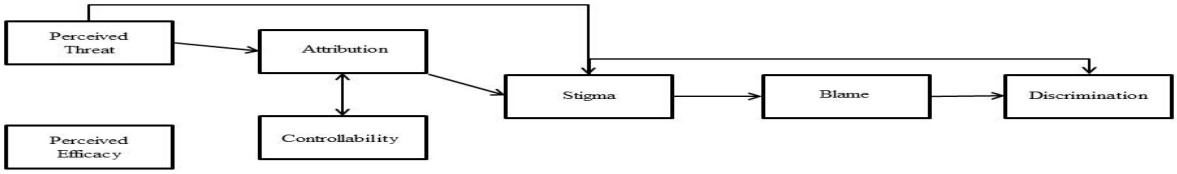

Figure 7. Framework of results including attribution and controllability as separate factors.

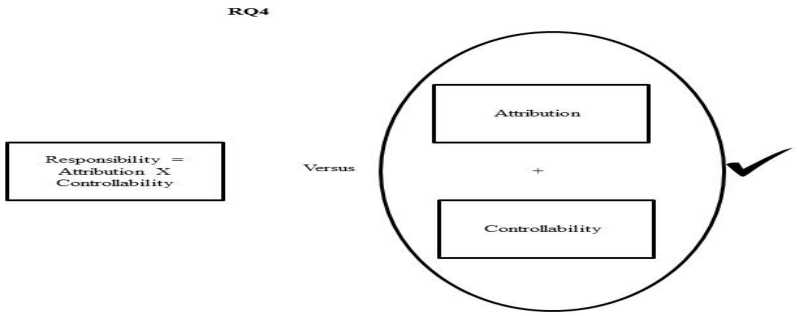

Figure 8. Visual results of research question five.

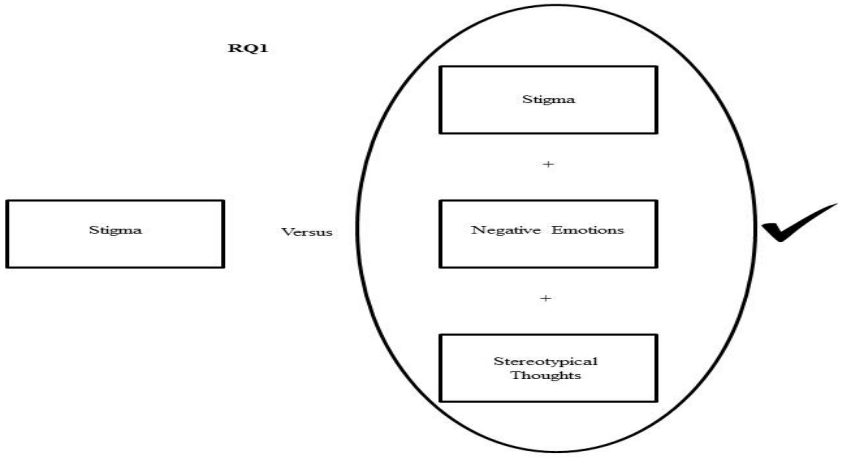

Figure 9. Visual results of research question one.

Chapter Six: Discussion, Implications, and Limitations

Chapter Overview

Overall, only some of the proposed outcomes of this dissertation were upheld. However, what was found has important theoretical, scholarly, and practical implications. Generally, the topic of smoking did not yield any results for the interplay between threat, efficacy, stigma, or controllability. However, the results did mimic vaping results with respect to stigma's connection to blame and discrimination. Although the topic of vaping did not present any significant results for efficacy, it did show effects of threat on stigma, as well as relationships between all of the other variables of consideration. It is likely that vaping had different results, in part, because its use and outcomes are significantly lesser known that smoking. The results, in whole, will be discussed in this chapter.

Results Summary

Manipulation results

The major premise of this project was that increasing secondary audiences' perceptions of threat and efficacy, the two primary components of the EPPM, would, in turn, increase stigmatization, perceptions of responsibility, blame, and discriminatory behaviors. Two parallel health topics were explored – smoking and vaping (using electronic cigarettes). These two health behaviors were chosen for their similarity in nature (e.g., both involve using nicotine through inhalation and exhaling a "cloud"), as well as for their dissimilarity in public familiarity. The goal of the study was to manipulate EPPM-framed messages for each to determine whether these messages increased threat and efficacy perceptions and, in turn, stigmatization of those who engaged in each of the two behaviors. Additionally, the nuances and relationships of constructs such as stigma, responsibility, blame, and discrimination were explored. Finally, of the many

potential moderators that could theoretically exist in this project, four were chosen for in-depth exploration; locus of control (LOC), race/ethnicity, education, and income were examined for any differences within each moderator on outcomes of threat, efficacy, responsibility constructs, stigma constructs, blame, and discrimination.

The smoking manipulations failed to be appropriately differentiated for experimental analyses. The vaping manipulations succeeded, but only for threat conditions, and very little difference was found between outcome measures. Different threat messages resulted in different perceptions of attribution to environment for the vaping topic. Considering the limitations of the failed smoking manipulations, and efficacy manipulations across both topics, I treated the study as observational and examined each hypothesis and research question using the collapsed conditions for each topic. Future researchers should look to successfully manipulate these messages to get a better understanding of how secondary audiences process the messages, whether these messages serve as a guide for increasing or decreasing perceptions of threat or efficacy for different health behaviors, and how the creation of these perceptions affect stigmatization of others.

EPPM messages are notoriously hard to create in lab settings, which I knew going into the project. However, the theoretical argument of this project is still valid; essentially, I argued that as threat and efficacy perceptions increased, stigma and other outcome variables would change accordingly. Although the messages failed to create varied threat and efficacy perceptions, the ratings of perceived threat and efficacy were still viable for looking at other variables' associations. Although I did not succeed in manipulating audiences' perceptions of all threat and efficacy perceptions, these are still the two primary constructs of the EPPM that lead to various outcomes. That being said, in looking at the means for threat and efficacy, in some

cases it is questionable as to whether any messages could significantly increase the means, especially for smoking and threat related to smoking. The failed manipulations will be considered more during the limitations section.

Observational/survey results

Only about half of the hypotheses were supported or partially supported in the observational study; however, what was found has potentially important meaning for scholars and practitioners. First, threat was positively associated with stigma in the vaping topic. One of the primary reasons I included vaping was the premise that its trajectory with respect to public opinion may follow that of the many decades of changing social attitudes toward smoking since the two behaviors appear to be so similar and are being treated as synonymous by many organizations and public health efforts. The differences between the two is the relative lack of knowledge the public possesses about vaping, although it is likely that if the act is continuously framed alongside smoking that people will develop negative attitudes toward vaping, regardless of differences in actual threat. This study demonstrated that the way messages are framed, especially if they are designed to increase the perception of threat, can potentially affect stigmatization. Even without the successful message manipulation, threat perceptions were associated with stigma such that as perceived threat increased, stigmatization of those who vape also increased.

There were also several other notable results from the survey data. First, it is important to acknowledge that none of the hypotheses for efficacy were supported. Possible reasons and implications are discussed in-depth later in this chapter. Second, perceived controllability did partially mediate the relationship between perceived threat and stigma. Although a direct effect of threat on stigma was still present when controllability was introduced as a mediator, there was

also a significant path from threat to controllability to stigma. The same results were found for two other dimensions of perceived responsibility – environmental attribution (attribution 2) and weak character attribution (attribution 4). In other words, there was evidence that various and nuanced dimensions of responsibility did, in fact, mediate the relationship between threat perceptions and stigma assignment.

Third, stigma had direct effects on blame, and blame had direct effects on discrimination. Although mediation analysis was not performed with these variables and only correlation (not directional causation) was verified by this study, it is important to highlight the pattern from stigma to blame to discrimination was significant for both smoking and vaping topics. Fourth, two dimensions of theoretically conceptualized stigma (negative emotions and stereotypical thoughts) were explored for their relationship to one common stigma measure. Without SEM, direct comparison of one measure to the other as a latent construct was not possible. However, results demonstrated that negative emotions and stereotypical thoughts did add to the variance of stigma on outcomes of blame and discrimination.

Fifth, all proposed variables for this study were entered into a hierarchical regression model to examine their contributions to stigma, blame, and discrimination. Specifically, threat, responsibility constructs (controllability and attributions), stigma constructs (stigma, negative emotions, and stereotypical thoughts) were entered into the model for blame as an outcome. The model for discrimination was identical except it included blame in the regression. Results were significant for both smoking and vaping topics. Generally, most or all of these variables added variance to both models, demonstrating their associations with one another and supporting conceptualizations of stigma, perceived responsibility, and blame/discrimination.

Finally, LOC, race/ethnicity, and income were tested as moderators for all of the project's variables. For smoking, participants had different perceptions of controllability and blame based on their LOC such that internal LOC people perceived more controllability and assigned more blame for health outcomes. LOC in the vaping topic was significant for controllability, stigma, blame and discrimination such that people with internal LOCs scored higher on these measures. With respect to race/ethnicity, there were differences between attribution based on weak character, stigma, stereotypical thoughts, and discrimination for the smoking topic. For the vaping topic, there were no differences in between any races/ethnicities for any outcome variables. For education and stigma, the patterns between the two health topics across both income and educational differences were similar; in general, with more education and income, people perceived greater levels of threat, higher levels of stigma, more attribution to environment, greater stereotypical thoughts, and increased levels of discrimination.

Overall, the study, using observational data, partially supported many of the hypotheses and answered some of the research questions. How these results contribute to and expand upon the theoretical literature will be discussed next.

Theoretical Contributions

There are several areas of literature that are expanded by the findings of this study. The EPPM and fear appeal work, the stigma and public health body of literature, and the area of responsibility and health all benefit via the contributions of this project. This dissertation also provides some new insights into, highlights some corresponding challenges of, the ethics of public health messages.

The EPPM and stigma

While threat increased stigmatization in the vaping condition, it did not in the smoking condition. Further, efficacy failed to yield any significant results in either condition. Although these hypotheses were not supported, future research should still investigate efficacy's role in the stigmatization process. Looking at the means in this project reveals that secondary audience members had a fairly high perception of efficacy and did not perceive any differences between messages that (de)emphasized it. This null hypothesis, however, is telling.

Generally, it seems, that secondary audiences believe avoiding or the cessation of smoking or vaping is easily achieved. While either of these behaviors may be relatively easier to prevent initiation, cessation is another story. For people who are addicted to nicotine, research shows cessation is extremely challenging (e.g., Zhou, Nonnemaker, Sherill, Gilsenan, Coste, & West, 2009). For secondary audiences, this reveals a lack of full comprehension regarding the addictiveness of nicotine and/or the difficulty in overcoming addiction in general. Future research should examine several facets of this finding. First, whether EPPM-framed messages even can change perceptions of efficacy for a variety of different health behaviors, or whether these beliefs are soundly entrenched for most health topics. Additionally, using the contact hypothesis (Allport, 1954), scholars should examine whether EPPM messages influence differences in secondary audience efficacy perceptions between people who have had contact with someone who struggled to quit or change a behavior and people who have not had contact.

Further, if a secondary audience member has had contact with a smoker who easily quit (indicating a lesser or lack of addiction), this may create a blanket belief regarding all people who smoke or vape and the relative ease of quitting. Research should also examine efficacy beliefs among people who do smoke or vape (primary audiences) and former smokers or vapers.

To my knowledge, no prior research has attempted to tease out differences in efficacy or threat between primary and secondary audiences, let alone using the Contact Hypothesis as a way to look for differences. This would extend the EPPM literature by providing a new avenue of research that examines the connections between these two theories. Similarly, issue involvement (Petty & Caccioppo, 1979), as well as the observations of others' cessation, may moderate efficacy beliefs regardless of public message content. This is important to acknowledge – although we aim to educate the public, some beliefs may be more malleable based on saliency of the topic. Future studies should incorporate issue involvement as a potential moderator for the effects of threat and efficacy on secondary audiences from a fear appeal message.

This study demonstrated that as the perception becomes higher for threat, stigmatization of groups who enact admonished behavior grows, and so does the discrimination toward them. Unfortunately, this discrimination may influence ultimate primary audience attitudes and behavioral changes. For example, recent research shows that EPPM-framed messages, or increasing perceived threat and efficacy, can, in fact, result in increased psychological reactance (Brehm, 1966) for *primary audiences* (Quick, LaVoie, Tylus-Reynolds, & Martinez, in press). Although that project did not look at stigma, blame, or discrimination associated with this relationship, future research should.

Reactance is created and/or enhanced when people feel that their freedom to engage in a particular behavior is threatened (Brehm, 1966); in this case, it is possible that primary audiences may feel reactant and secondary audiences may discriminate against them all from the same EPPM- or fear-appeal-framed message. This may create a "double-whammy" effect on stigmatized groups. Unfortunately, psychological reactance can result in many of the same maladaptive outcomes that stigmatization, discrimination, and marginalization can cause; anger,

negative thoughts toward a message source or the "other" group, and boomerang effects are just a few possibilities. If EPPM-framed messages induce psychological reactance within primary audiences *and* discrimination toward primary audiences by secondary audiences, this could potentially combine the maladaptive outcomes of both; in other words, primary audiences may engage in maladaptive behaviors related to reactance as well as maladaptive behaviors from the effects of felt or enacted stigmatization. Reactance and perceptions of discrimination may be strengthened within stigmatized groups by the social and group identity that smokers or e-cig users develop. Needless to say, all of these outcomes are counterproductive to the goal of a healthier society.

Future research should look for connections between EPPM-framed (or fear appeal) messages, primary audience reactance *and* secondary audience discrimination to better understand how these messages might create negative consequences from both angles for people who engage in a socially condemned behavior. Theories of group or social identity or categorization also should be considered to determine whether the combination of reactance and perceived discrimination contribute to "in-group" bonding and further entrench the health behavior. Threatening messages appear to have negative outcomes from multiple perspectives.

A final consideration for EPPM-related work is the way in which we (mis)use these messages. This study has elucidated how perceived threat *toward others* is associated with secondary audience's perceptions of responsibility, stigma, and blame. However, some promising research has shown that these messages' effects on secondary audiences may be used for positive outcomes. For example, Barnett et al. (2010) found that in flu pandemics health care workers were more likely to feel empathy for and help those with influenza when they were presented with messages that emphasized the threat to *others* but efficacy for themselves. Most

EPPM work has focused completely on target audience message construction and outcomes, attempting to scare people who have unhealthy behaviors and building efficacy for them to change their own behaviors. However, it is time that we rethink the way we use the EPPM; if a message is going to include both threat and efficacy, research should determine whether these messages may be used for the good of everyone. By using messages to emphasize threat to others and create a sense of compassion, social responsibility, and efficacy to help others, the EPPM could be potentially used to increase the desire to help others in danger, reducing stigma and discrimination.

Stigma and responsibility

In addition to the relationships between threat, efficacy, stigma, blame and discrimination, this project examined the nuances involved with the construct of responsibility and its relationship within the stigmatization process. The idea of responsibility was considered for both ongoing control and initial uptake. This portion of the study was undertaken because of the distinctions made in Smith's (2007) and Weiner's (1996) work, that both choice and control comprise responsibility. To look at the role that each of these constructs play, measures of controllability and attributions of initiation were teased out and tested separately for their contributing role in stigmatization. Four separate, and popularly believed attributions for the initiation of smoking or other negative health behaviors were tested alongside a measure of controllability for one's ongoing engagement in that behavior. I hypothesized that these variables would be highly correlated, and they were, although not as strongly as had been posited.

The correlations between attributions of genetics, environment, stress, and weak character and controllability were similar in both smoking and vaping topics. Attribution of genetics as a cause for the initiation of smoking or vaping was negatively associated with

controllability. In other words, the more people believed that others had a genetic propensity toward the uptake of these behaviors, the less it was believed that those same people could control their ongoing behavior. In the smoking topic, controllability was positively associated with both stress and weak character; that is, the more people ascribed to the belief that others began smoking or vaping due to stress or character, the more they believe that those same people have the ability to control their ongoing behavior. Vaping, on the other hand, demonstrated secondary audiences' negative associations between controllability and environment and no associations between controllability and weak character.

In reality, attribution for a behavior is complex, much like an individual's control over their ongoing behavior. However, how the public assigns weights to these causes and perceptions is unknown and important for health education efforts. What is noteworthy is that the means for attribution of genetics were extremely low for both smoking and vaping (although they both trace back to nicotine addiction). Secondary audiences largely endorsed environmental, stress-related, and moral rationales for these behaviors, despite the fact that research has shown that genetics play a sizable role in both the initiation and continuation of addictions, including nicotine dependence. For stigma, there is often a moral component assigned to the stigmatized; for the topic of smoking, which has already been cited as a stigmatized behavior, weak character was positively associated with controllability but, for the vaping topic, which has not yet had stigma firmly attached, weak character did not have the same association. The potential practical implications of these differences between perceptions of smoking and vaping will be discussed in a later section. Of final note are the associations between attributions. The pattern was identical for both topics, with the exception of the lack of association between genetics and environment for smoking. The remainder of all attributions in both topics were correlated with

one another. This does suggest that there is some participant understanding that attribution is not typically mutually exclusive. It may be that the public sees attribution as complex, as it certainly is. However, how people determine the weight for various attributions across different health topics is unknown, and they may assign these weights in ways that are oversimplified.

Future studies should seek to understand how people determine attribution for a given behavior, and why particular attributions are more strongly linked with perceptions of ongoing controllability and stigma, as well as what communication shapes these beliefs. Additional research should also compare stigmatized and non-stigmatized health behaviors and conditions to explore the differences in attributions between them and how public health messages may influence these attributions.

This project also examined whether responsibility mediated the relationship between perceived threat and efficacy and stigma. Because I used two measures of responsibility (attribution and controllability), both were tested for mediating effects between threat and stigmatization (efficacy was excluded based on its lack of association with stigma). Further, these mediation analyses were only conducted on vaping because threat failed to influence stigma in this project. That being said, three dimensions of responsibility partially mediated the relationship between threat and stigma – controllability, attribution of environment, and attribution of weak character (attributions of stress and genetics did not mediate the relationship). This finding offers some insight into the stigma process, while also creating more questions.

These analyses demonstrate that it is possible that when threat perceptions are present, the level of stigma assigned to others who engage in this threatening behavior is partially determined by how much responsibility for their behavior they are perceived as having. Specifically, particular attributions and one's ability to control their behaviors are potentially

(perhaps unconsciously and briefly) considered in the assignment of stigma. This result should be taken with caution, however. First, responsibility constructs only partially mediated this relationship, insinuating that the stigma process occurs with or without responsibility assessment. Second, while it is possible that for some behaviors, various attributions and controllability mediate the relationship between threat and stigma, it is also just as possible that for other behaviors it does not.

To provide an example of a threatening message with no stigma, awareness campaigns have long-attempted to warn women about the dangers of skipping self-breast exams and mammograms. However, engaging in this avoidance behavior is not often stigmatized, even though the potential consequences are severe and the responsibility for breast exams is on the individual. Although people may assess controllability and attributions for this behavior (or outcome), it does not necessarily lead to stigma. On the other hand, for the behavior of smoking, controllability and attributions do seem to influence stigma assignment. This likely is from social normative beliefs and moral assessments of health behaviors (Guttman, 2000). One situation also involves *actively* engaging in a behavior (smoking), while the other involves *not* engaging in a protective behavior (conducting breast exams). It is also likely all of these considerations influence blame, as well, because it is highly correlated with responsibility constructs. Future research should examine this mediation more closely for the determinants of when and how responsibility perceptions contribute to stigmatization, under what circumstances, and for what "types" of threatening health behaviors. An additional possibility is that stigma mediates the relationship between threat and responsibility, instead. Time did not permit for exploration of this reversal, but future studies should tease out the order of mediation as well as the circumstances under which it occurs.

Stigma assessment

In addition to looking at the nuances of responsibility, this project also explored the adequacy of one popular existing stigma scale. Generally, most stigma measures are from the perspective of the stigmatized, and few, to my knowledge, are consistently utilized in the communication literature. The scale I initially chose did not seem to follow Goffman's (1963) (or other stigma scholars') theories of stigma wholly. It involves little to nothing regarding the emotions that are experienced during stigmatization or the stereotypical thoughts that may accompany it. Because of the lack of these types of items, the scale seemed almost more representative of discrimination than of stigma. However, the majority of stigma theorists argue that discrimination is an *outcome* of stigma, although the lines can be blurred; all theorists, however, agree that stigma involves stereotyping and negative emotions such as disgust and anger.

To determine whether the addition of stereotype and emotion measures improved the prediction of stigma, I adapted a measure for each (negative stigma-related emotion and stereotypical thoughts), using existing measures and adjusting them based on my own preliminary research. Both of these new measures were reliable, and both of them added significant variance to models of stigma and discrimination. In other words, adding negative stereotypical thoughts and negative stigma-related emotions to the stigma measure added variance in models predicting blame and discrimination.

These findings are theoretically important. Stigma is not solely attitudes or beliefs about a behavior; it is a complex and intertwined construct comprised of attitudes and beliefs, as well as emotions and stereotypies. Future research should look to include these dimensions in stigma projects in order to capture the whole of the stigmatization process. Further, a new

comprehensive measure of stigma that captures all of these dimensions should be created for future work in both health communication and broader stigma projects. A scale that incorporates all of these facets will more closely align with the theoretical underpinnings of stigma as discussed by Goffman (1963), Link & Phelan (2001), and Smith (2007).

Moderators' influences

Another aim of this study was to look at factors that may influence stigma assignment, such as locus of control, race/ethnicity, education, or income. I examined each of these for differences within each group to discover whether these factors significantly mattered for any of the outcome variables in this project. Univariate analyses on self-reported race of secondary audience members revealed that there were differences between some groups on some variables. For example, Latinos were more likely to attribute smoking and vaping to weak character than Whites, Asians assigned greater stigma and discrimination than Blacks and multi-racial people, and Latinos endorsed more stereotypes than Blacks. Race/ethnicity is a social construction, but these self- and other-assigned categories are also heavily influenced by lived experience, especially for minorities. In this case, particular groups may stigmatize, discriminate, stereotype or assign attribution based on social group norms, experiences, and cultures.

Examining racial/ethnic groups' attitudes toward health behaviors and people who engage in them is a worthy undertaking for race and health scholars, especially considering the health disparities in this country. Projects that consider stigma assignment and race/ethnicity would contribute to the literatures on race, stigma, and health communication. For instance, Goffman (1963) briefly discusses having "double" stigma, so-to-speak, which may occur when a person of color is both stigmatized for their race/ethnicity *and* for a particular health behavior or condition. Although Goffman does mention this possibility, I am unaware of any projects that

specifically look at how communication efforts combined with social contexts potentially create a "dual" stigmatization for some groups. This study only examined whether differences existed in the assignment of stigma by race/ethnicity, but future work should also investigate whether people of color are more stigmatized when they engage in negative health behaviors than are Whites.

Income and education both demonstrated similar patterns for smoking and vaping. It appears that, generally, responsibility constructs, stigma, blame, and discrimination increase with education and income and then plateau. This particular finding is baffling and, at the same time, makes sense. On the one hand, we would expect stigma-related outcomes to decrease with education and income (the two are often heavily correlated) because more educated people have higher health literacy, more awareness of social health issues, more communication from medical professionals, and more exposure to diverse populations and health behaviors (Bao, Fox, & Escarce, 2007). In other words, people with higher education and income may have greater capacities to understand the complexity of health behavior change.

On the other hand, smoking rates are lower among people with higher education and income, creating a sphere of like-mindedness about the many things, including health behaviors like smoking. The health literacy gained from education and income does not necessarily translate to a greater understanding of addiction or tolerance of those with addiction, even if the complexity of addiction is understood. People can intellectually understand something, but have trouble integrating the information into lived experiences. Threat perception means were higher for those with more income/education, which does suggest that threat messages may be heeded to a greater degree, could, thus, emphasize the "stupidity" of engaging in such threatening behaviors.

According to the knowledge gap hypothesis (Tichenor, Donohue, & Olien, 1970), information on health issues will be distributed unequally, favoring those with higher education and income. An audience with higher socioeconomic status is also more likely to already know about particular health risks, and, thus the knowledge gap is widened. Guttman (2000) expresses concern about social reproduction (Cho & Salmon, 2007) as an ethical dilemma to which health researchers should pay attention, arguing that benefits of these campaigns may not be equally distributed among community members and may, in fact, harm some (p. 173).

The communication and race literature has long-embarked on understanding relationships between race/ethnicity, class, and power, and the work on health disparities does address systemic privilege and power issues. However, to my knowledge, no work has specifically looked at stigma as a societal and systemically driven construct in the context of particular health behaviors while considering these demographic characteristics and the role of power and privilege.

Orientations and attitudes toward those who engage in dangerous health behaviors do not have to determinants of exterior factors (like education or income) to influence stigma creation and maintenance. Locus of control is an internal orientation toward the world that we all possess. These orientations are not immediately obvious, although they are often expressed and performed in our communication and attitudes toward various topics. People with an internal locus of control believe that there is no such thing as fate or external forces that influence our decision-making; instead, we have control over each choice we make and our ultimate outcomes. People with an external locus of control, in contrast, believe that myriad factors outside of our control may influence our decision-making, day-to-day lives, and eventual outcomes.

Considering the meanings of internal and external LOC, one would think that LOC would dictate attribution endorsement and perceptions of controllability, but attributions did not differ for vaping or smoking between people with internal or external LOCs. However, controllability did significantly differ based on participants' LOC such that those with internal loci had much greater perceptions of controllability than did those with external LOC. The second outcome here is logical, considering that LOC is theoretically about perceived control of one's actions. Attribution, though, does not seem to be affected by LOC, at least for smoking or vaping. It is possible that attribution in this project does not well-align with LOC's premises in that this study asked why people began smoking/vaping but not whether they should have had resistance against those reasons.

LOC did also determine the amount of blame participants assigned for negative health outcomes, as well as the amount of discrimination toward people who engaged in vaping. Again, blame is a closely-tied concept to controllability; if one is perceived to have control over their behavior but choose not to exercise it, then others assign blame when negative health outcomes occur. In this context, people with internal LOC assigned more blame and discrimination than those with external LOC. Stigma was not associated with LOC, which was a surprising result. It poses the question as to whether perceptions of controllability are necessary for assigning stigma or whether they simply enhance it. This question is also alluded to by the previous findings on the mediating role of controllability.

Overall, people with external LOC may possess more empathy or a greater capacity for comprehending the complexities of addiction or health behaviors. This contributes to the stigma literature since, to my knowledge, no work has been done examining the relationships and differences of stigma and related outcomes based on general LOC orientations. Future research

should look at the relationships between LOC, empathy, responsibility, and stigmatized health behaviors to further understand these results. It is possible that combatting the stigma associated with particular health topics may best start with those with an external LOC, as they may be more open to learning contextual influences and less entrenched in an individualistic choice/consequence belief system.

Other theoretical contributions of note

Blame and stigma were both associated with discriminatory beliefs and behaviors for smoking and vaping. The newly created and validated scale for discrimination included dimensions of interpersonal, social, and policy-related discrimination. There are few measures of discrimination for health behaviors/conditions, and most of them are topic specific. This measure was designed for use with any behavior or condition with only minor adaptations.

Generally, most forms of discrimination in this scale were passive; that is, none of the items assessed overt, aggressive, or explicit acts (e.g., attacking someone who vapes/smokes). Most of the types of discrimination associated with blame and stigma in this study support the theoretical forms of social distancing outlined in the stigma literature. For example, not wanting to interact, not wanting to accept into one's family or social circle, and not wanting to support policies that may help people who smoke or vape are all examples of distancing and demarcating the boundaries of "us" versus "them." Goffman (1963), Smith (2007), Phelan and Link (2001), and Weiner (1995) all posit that stigma is, in large part, about the separation of stigmatized groups from the rest of society; this act of separation requires various discriminatory practices to achieve full marginalization. Extant research demonstrates that stigmatizing and marginalizing particular populations has serious consequences for that population, whether the separation is based on race, mental health, socioeconomic status, or health behaviors and conditions.

Smith (2007) discusses potential ancient justifications for this type of distancing. For example, from an evolutionary standpoint, people would separate out those who they believed posed a threat to the rest of society. In retrospect, this behavior was often due to a lack of understanding or education about the particular condition or people in question. Lepers, for instance, were long banished to their own colonies for fear that they may infect the broader population. In a similar vein, minorities were (and still are) segregated based on a fear of misbeliefs about those who were of different color. When fear is high, and people are faced with that which they fear, a flight or fight mechanism is often responsible for a shift to anger, disgust, and aggression. As Smith (2007) points out, however, these evolutionary rationales for stigma and discrimination are no longer necessary, and they continue to exist as an artifact. These attitudes are no longer at the surface of people's actions; rather, they are deeply rooted and largely unrecognized as a problem by society. Additional work should determine whether this "passive" or "distancing" discrimination varies between health and non-health related behaviors and attributes. Further, communication research should examine how health messages shape our desires to distance ourselves from other groups.

The preceding section discussed theoretical contributions, observations, and suggestions for future scholarly work. The next section will broadly discuss how the results of this study may impact lived experiences and practical implications.

Practical Implications

First, this project's findings regarding threat perceptions and stigma are troubling. With so many campaigns using fear appeals in part or whole, one wonders whether these negative effects are present across all health topics with frightening warning messages. Public health campaign designers should be aware of the ethical dilemmas posed by the use of threatening

messages and look for innovative ways to inform the public and reduce stigma. More scholarly work is needed for practitioners to consult, but a good start would be to either provide more comprehensive information (not just how threatening a health behavior is) or to try using other persuasive strategies that do not involve the induction of high levels of fear and threat.

Although organizations and public health efforts may be well intentioned, there is a potential issue with increasing stigmatization of the use of electronic cigarettes, beyond the inherent issues with stigma assignment itself. A major debate is currently transpiring with the public health realm, as well as within the public (for those who smoking affects). While many link the two together (e.g., bans on smoking *and* vaping, even outdoors), many others argue that electronic cigarettes may be one promising answer for smoking cessation (Cahn & Siegel, 2011; Etter, 2015). Some argue that using an e-cig is a potentially successful method to stop smoking. From a harm reduction standpoint, even if smokers switch to vaping and continue to use electronic cigarettes, no research has uncovered any lasting impacts or health issues from vaping, aside from those present with the use of nicotine (Cahn & Siegel, 2011; Etter, 2015). Thus, one argument is that vaping, while not as optimal as the complete cessation of nicotine use, is far less harmful to the person partaking, as well as to the people around them.

By stigmatizing people who use e-cigarettes, it may create the same effects as the stigma attached to smokers. Although this project did not find high levels of stigmatization toward smokers, many other projects have (Bell et al., 2010; Graham, 2012). In essence, whether intentionally or not, creating a social stigma toward a behavior has a host of issues for people who engage in that behavior. Like smoking, negative social attitudes may prevent some people from initiating vaping if they do not already smoke cigarettes; however, for those who are addicted to nicotine, it is unlikely to cease the behavior. Instead, a bevy of potential unintended

consequences may ensue, like internalizing the stigma or reacting against society's norms by further embedding the behavior.

Future research should continue to examine messages, both implicit and explicit, that are currently being presented to the public to determine how people who do not vape interpret these messages, whether they are perceived as threatening, and whether the messages increase stigma by associating e-cigarette use with smoking. What information do people glean from public messages, communication, and discourse surrounding vaping, and how does that shape public opinion of those who engage in the behavior? This research should include projects that investigate news stories, social media content, and public signage about, as well as interpersonal discussion of, vaping. There is ripe opportunity to observe and intervene as stigma is socially constructed before its cemented in the public sphere. If e-cigarettes do offer harm reduction, I argue that scholars and public health practitioners would be remiss to allow messages to create and entrench stigma toward people who vape in lieu of smoking.

There are many additional reasons why stigmatization is problematic, some of which was found in this project. Stigma was associated with blame and discrimination in both smoking and vaping topics. As a reminder, blame for this research was defined as the tendency to assign blame for *one's own health outcomes*. This construct insinuates a lack of empathy for people who have short or long term negative health consequences because of the perception that "they did it to themselves." A prime example is the difference between people's attitudes toward someone with breast cancer and someone with lung cancer. It is important to note that, although no mal effects of vaping have been definitively found, participants were already primed to assess blame for potential consequences. Unfortunately, blame creates myriad issues for those who do engage in a health behavior, but also for those who do not.

For instance, although smoking can cause lung cancer, not all people with lung cancer have smoked. The same holds true for many other illness and conditions; if they are commonly associated with a particular health behavior, especially behaviors that are stigmatized and socially condemned, blame is assigned to the victim of the disease and few other contextual influences are considered. For people who have engaged in a dangerous health behavior and contract a short- or long-term health consequence, they can feel as though society shames them and that support is in short supply. This is important because of the impact it has on interpersonal health communication and social support.

The frustration that medical professionals, friends, or family may have due to an illness that was hastened by a negative health behavior is understandable; however, the manner in which people communicate with the patient is likely different when there is a lack of empathy and a sense of blame placed on the person with the health issue. This matters for two major reasons: first, clear, compassionate communication from medical professionals undoubtedly has impacts on patient comprehension, adherence, and emotions (Chou et. al, 2010; Frankel & Beckman, 1989; Robinson, 2003). When patients feel like a provider is unsupportive, condescending, patronizing, and/or non-empathetic, not only does communication suffer, but overall health outcomes may as well.

Second, social support is a substantial predictor of positive health communication and health outcomes (e.g., Chia, 2009; Segrin & Domschke, 2011). The feeling of blame, remorse, and frustration experienced by friends, family members, and important others may impact how they enact social support and to what degree. Research shows that patients in these situations often already feel guilty and defeated based on their own perceptions of their situation (Criswell,

Owen, Thornton, & Stanton, 2015). This feeling may be amplified by medical professionals and social support networks, leading to maladaptive coping and potentially worse health outcomes.

The public already tends to assign blame based on the particular condition, regardless of any knowledge of a patient's prior behaviors. Observationally, ask yourself what we often think when we see a person with an oxygen tank? When we hear of a person's diagnosis of lung cancer, how often do we make the assumption that they smoked? These assumptions, spurred by well-intentioned public health warnings and common (mis)understanding of health conditions and behaviors reaches beyond the realm of smoking or vaping. For example, people with type 2 diabetes report feeling stigmatized and blamed for their condition regardless of whether they led a healthy lifestyle prior to their diagnosis (e.g., Middleton, LaVoie, & Brown, 2012). Future research should look for ways to reduce these public assumptions and to increase coping and communication skills for those affected by oft-stigmatized health conditions. Successful coping is defined by accepting things that cannot be changed and emotionally adjusting to the situation (Tardy, 1994). Regardless of what led to a health consequence, it is in the best interest of the patient and all parties involved to cope and let go of blame or guilt. Finding effective communication methods to assist patients, important others, and medical professionals in improving their interactions and, ultimately, health outcomes is an important area of health communication research to pursue, as well as a key phenomenon for health and public health practitioners to address.

Ultimately, blame harms everyone, including those who have never engaged in an unhealthy behavior but still face the same diagnoses as those who have. Public opinion often drives both awareness campaigns and funding for research to cure specific diseases. For example, people living with breast cancer are overwhelmingly supported by larger society.

Unfortunately, diseases that are perceived to be of the victim's own doing are often less understood by the public and less funded for research. For example, HIV/AIDS, although now heavily funded, was not initially. Public attitudes and misinformation led to the stigmatization of the illness and the sentiment that those who contracted the illness deserved their fate. Although these perceptions have changed with time and a lot of communication effort, other illnesses still suffer from the same lack of societal empathy. For example, medical professionals, other patients, and broader society have far more negative attitudes toward patients with lung cancer than with breast cancer (Sriram, Mills, Lang…Schiller, 2015).

These attitudes are sometimes expressed as generosity, or lack thereof, toward research efforts. As of March, 2016, there were 93 active research grants totaling close to $30 million dollars for studying lung cancer compared to 185 grants totaling close to $75 million for breast cancer (American Cancer Society, 2016). However, of the people diagnosed with lung cancer 10-20% have never smoked; considering just over 402,000 living people have been diagnosed with lung cancer in the United States, there are approximately 40-60,000 who have never smoked (American Lung Association, 2016). The lack of public sympathy and funding ultimately reduces the odds of finding a cure for smokers and nonsmokers alike.

However, discrimination against those who engage in particular health behaviors causes more harm than good for society as a whole. People who feel stigmatized or discriminated against often internalize feelings of worthlessness, and, thus, are less likely to seek help, more likely to acquire depression and anxiety, and less likely to be honest with health care providers about their behaviors (Corrigan, Kuwabara, O'Shaughnessy, 2009; Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Earnshaw & Quinn, 2012; Meisenbach, 2010). Further, feeling marginalized as an "other" may strengthen bonds between people who all engage in the

behavior; as those bonds strengthen, the development of a social identity is created. Identity is a central component of stigma (Goffman, 1963), and has been discussed in several ways in the stigma literature. First, one's personal identity is often monitored and managed by people who perceive that society has assigned a social identity of membership of a stigmatized group (Goffman, 1963). Additionally, based on social categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) and social identity theory (Tajfel & Turner, 1979), personal and social identities lie within a continuum; when social identities, such as stigma are activated, "people come to perceive themselves more as interchangeable exemplars of a social category than as unique personalities…" (Turner et al., 1987, p. 50).

Additionally, according to the self-expansion model (Aron, Aron, Tudor, & Nelson, 1991), people maintain relationships with others who share similar resources, perspectives, and identities. In relational and group settings, individuals eventually do not solely share the perspectives and identities of others, but come to embody the identity of the group. Social comparison theory (Festinger, 1954) posits a similar idea; people tend to gravitate and group themselves with others with whom they feel comparable. In other words, if one is stigmatized, feeling socially comparable and similar may enhance social identification with others with the same group membership and label. This likely contributes to the continuation of particular health behaviors; as group members feel marginalized by broader society, they may also perceive that the behavior creates cohesion and a sense of community.

The act of separating "us" and "them" via powerful groups and society may create a desire to commiserate about shared experiences and create social identities with "out-group" members (Link & Phelan, 2001; Smith, 2007a). Intergroup differences are often made more salient and exaggerated, whereas intragroup identity among the stigmatized may be strengthened

by overestimations of similarities and shared feelings of marginalization or discrimination (Goffman, 1963; Jones, 1984). These social identities may hinder cessation or behavioral change because the behavior is the primary link to belongingness.

Some attitudes toward health behaviors or conditions are also attributable to group membership based on education and income. First, many higher education institutions have pushed to create smoke and vape free campuses, reinforcing the negativity of the smoking behavior, emphasizing the potential danger it causes toward others, and intertwining the two behaviors (despite their dissimilarities). In this sense, students from a young age are taught that smoking is "bad" and through college are exposed to messages that not only highlight the health threat to smokers but to others as well. These messages culminate in higher education institutions where smokers and vapers are publicly marginalized. Cho and Salmon call this phenomenon system activation.

System activation occurs when a health campaign, and news media coverage of it, activates other systems, such as government, industry, media, and communities, (Cho & Salmon, 2007; Hornik, 2002). Because health communication campaigns occur in open social systems (Viswanath & Demers, 1999), a change in one subsystem may activate changes in others (Cho & Salmon, 2007). For example, Rogers (1995) noted, a "system is like a bowl of marbles. Move any one of its elements and the position of all the others are inevitably changed also" (p. 419). As the social norms and attitudes toward smoking changed over the decades, new information and communication created domino effects in broader society.

Most of these activations have been deemed as positive; for example, smoking was slowly banned in planes, hospitals, workplaces, and eventually any public building. Cigarette laws and labeling changed, requiring more restrictions on sales, increasing taxes, and dictating

additional warning labels. Eventually, as these "marbles" continued to move, smoking came under fire in outdoor spaces and banned on many school and organizational campuses. Although these shifts in social norms may be positive in many aspects, these activations also implicitly send repeated messages that smoking (and smokers) are to be separated, that they are synonymous with their behavior, and that they pose a danger to themselves and the public. For younger generations, these messages are the only ones they have ever known, and the system reifies them across all institutions.

Social norms that are both responsible for and created by system activation can be positive; however, some scholars are concerned about the role social norming may play in social control and encouraged adhesion to these social norms. Creating and reinforcing new social norms may also inadvertently marginalize or stigmatize those who do not conform to social norms. Because social norms require compliance and social conformity, those who do not conform are potentially subject to marginalization, stigma, isolation and shame (Bell, Salmon, Bowers, Bell, & McCullough, 2010). Although we know a lot about social norms and smoking, less is known about social norms and vaping. However, in this case, before the public has substantial information, system activation is already taking place by linking e-cigarette use to smoking in policies, communication, and bans.

Second, the country has entered one of the most pro-health eras of its history, and members of generation Z with higher SES families are leading the charge (Horowitz, 2015). This is undoubtedly a positive movement on the whole; however, issues of privilege may warp higher SES individuals' perceptions of people who engage in unhealthy behaviors. Because people tend to socialize with others of similar status, background, education, and income, the health behaviors modeled within those groups appear to be the social norm for group members.

Therefore, it is possible that intergroup differentiation occurs for more than just SES; are people who communicate within these higher SES echo chambers aware of the many advantages they possess that create a social and literal environment in which healthy living is perhaps easier to achieve? Future research should consider privilege's role in the stigmatization of others, especially considering that it is those who have the most power who stigmatize others the most (Goffman, 1963), and people with education and high incomes are arguably those with the most power.

Many of the overall results may be explained by Cho and Salmon's (2007) obfuscation, the "creation of confusion and misunderstanding" (p. 298). Although campaign designers may try to present information to persuade the public, there is a certain fallibility that can occur; complex information leaves room for misunderstanding by the message recipients. Additionally, sometimes media campaigns require the simplification of a message, but as researchers do their best to determine what information to simplify or omit, as well as how to frame that message, room for misunderstanding grows. Obfuscation may be one cause of secondary audiences' perceptions of efficacy, controllability, or attributions. Most messages regarding smoking do not address any of these issues or, in the case of efficacy, do not acknowledge the difficulty in cessation, leaving secondary audience members to come to their own simplified or misunderstood conclusions based on perceived threat. Although vaping is not yet well-known, it has already been repeatedly tied to smoking and has presented little or no direct information about its health effects to the public. It is logical to suspect that as oversimplified or insufficient information is presented over time people may further tie vaping to smoking, creating a trend that might resemble earlier social changes in perceptions of smoking.

An epidemic of apprehension (Cho & Salmon, 2007) may also be contributing to the stigmatization of people who vape. This refers to the public's unnecessary concern or obsession with a problem, based on messages they receive over time. Often these messages do not focus on the most pressing or dangerous problem in society or provide exaggerated accounts of illnesses. For instance, during the government and media push against crack cocaine in the 1980's, the American public perceived crack as an epidemic, when in reality, alcohol abuse was increasing at a far greater rate (Cho & Salmon, 2007). In this case, although vaping poses little threat to its users, the public has received both implicit and explicit messages over time that link vaping to smoking, a behavior which is infamous for its widespread harm. Further, what studies have been released regarding vaping are often misconstrued and passed along within the public sphere. For example, one study did find that vaping could be harmful; however, the vaping device in this study had to be turned up to a level that no person would (or could) utilize and inhalation had to be sustained for longer than most people can do so. These important codicils, however, often do not make it to the public, leading to simplified exaggerated messages regarding the threat of electronic cigarettes and public sentiment to match.

In general, this project's results were partially supported and, although they answered some questions, they produced even more. Although scholarly standards may suggest this is less than optimal, I believe that discovering new questions and unexpected results provides fuel and ideas for continued research in an area that is lacking. You have to start somewhere. Although this study could not be treated as experimental throughout, it succeeded in exploring new and adapted measures, investigating nuances in both the stigma and responsibility constructs, and demonstrating a correlation between perceptions of threat and stigma for a topic about which people know little. It partially supported the proposition that the EPPM's components (perceived

threat and efficacy) are associated with the stigmatization of others, and it fully supported that each of the constructs (except efficacy) discussed in this paper do contribute to outcomes of stigma, blame, and discrimination. It also yielded some non-intuitive findings, which highlight the complexity of these topics.

For example, in Figure 3, the path between controllability and stigma in the mediation model is negative. Put differently, for secondary audiences who are evaluating people who vape, the higher the controllability they perceive vapers to have, the less stigma they assign. Intuitively, and theoretically, this makes little sense. However, there are a few explanations for why some results, like these, may have negative relationships.

I looked back at the measures to consider why controllability was often positively associated with stigma and blame for smoking but not vaping (and even negatively associated with vaping). Admittedly, controllability has a lot of conceptual and literal overlap with blame measures, but I think the inconsistent results here have more to do with the topic than the measures. Vaping is, arguably, not commonly viewed as an addiction, whereas smoking often is. Vaping may be seen more as a hobby; there are collectors' items, conventions, vape competitions, and entire stores with the newest technology to expand one's collection. If secondary audiences view the engagement in this behavior as more of a social hobby than an addiction, there are two possibilities as to why there may be negative results. First, secondary audiences may believe that the more control vapers have, the more it is a fully-realized hobby; unless a hobby is deemed as dangerous, the public rarely stigmatizes it and often admires people's dedication to their craft. Secondly, if vaping is not seen as an addiction, the positive relationship between concepts like controllability and stigma may not exist. In other words, it seems intuitive that all other health behaviors that the public has labeled as "addictions" are

highly associated with controllability, blame, and/or stigma, but there is little information yet that vaping is a dangerous activity to an individual or bystander's health, and many people do not understand that the addictive nature of the nicotine present in many electronic cigarettes.

Finally, one last explanation for negative relationships for vaping may have to do with a subjective comparison between vaping and smoking, which look virtually identical and are already becoming linked together via policies, signs, and other system activation. It is possible that some people may believe that vapers do have more control - that they are controlling their desire to smoke tobacco by using a less harmful product. In this case, for controllability questions such as "no one forces someone to use an electronic cigarette," high scores may represent a belief that these people are engaging in harm reduction of their own accord, which would theoretically lessen stigma. Future qualitative work to explore how people think about vaping and smoking both separately and comparatively may shed light on these speculations. Beyond a few non-intuitive results, however, there are obviously other limitations to this study.

Limitations

The first, and perhaps, biggest limitation is the inability to complete the experiment due to message manipulation issues. I completed the study using self-reported perceptions of threat and efficacy for each behavior, but I was unable to manipulate those perceptions in the smoking messages, and only partially in the vaping messages. Creating messages that successfully communicate threat and efficacy to varying levels is a sticky wicket – and the topics chosen for this study likely further contributed to the difficulties I had. The threat of smoking is well-known, so well-known that it is difficult to change people's perceptions in any direction. As for vaping, several possibilities may explain the failed manipulations. First, the message threats were fake in order to lend severe threat to a behavior that has, so far, not indicated it possess such

threat. It is difficult to determine whether people viewed these threats as realistic. In retrospect, determining how much participants knew about vaping pre-study, as well as how much realism they perceived in the messages could have helped in guiding message creation.

As for efficacy for both topics, it is likely that secondary audiences already have an idea of how easy or hard it is to change a health behavior in which they do not participate and with which they have little or no experience. I believe that changing those perceptions would require more than one simple message. In "real-world" messages, the efficacy component is often not emphasized or present at all (e.g., Quick & LaVoie, 2015), short-shifting the EPPM's theoretical framework. However, the inconsistency in information about the relative ease or difficulty in behavioral change may inadvertently leave the public with uncertain perceptions and causing them to turn to their own experiences for guidance; for secondary audiences, the experience is likely scarce. Although the EPPM components could not be manipulated consistently, the results still support fear appeals as a whole, which use highly threatening messages to change public attitudes and behaviors. This study did establish that, for some behaviors, this emphasis on threat is related to stigmatization.

It is important to note, however, that this study was cross-sectional; participants were only exposed one time to their message condition. This may prime attitudes toward these behaviors or people who engage in them, but this study cannot definitively claim that messages lead to stigma over long-term exposure. However, even one exposure may matter in shaping public opinions, primarily because of the drench hypothesis. Unlike the cultivation, which has a drip effect and theorizes that many messages over time influence a recipient's perceptions, the drench hypothesis argues that message recipients may be just as influenced immediately following exposure an intense or significant exposure to a message (Greenberg, 1988).

Considering fear appeals are designed to create an intense exposure, one message may impact an audience significantly. Further, it is possible (and increasingly likely in our technological world) that people may see the same single message over and over in a short period of time thanks to social media. Even if the message only comes from one source and never varies in design or content, seeing it repeatedly in both old and new media sources even over a short period of time could shape how people view the topic. As for drip theories (many messages over time), I believe that repeated long-term exposure may result in both changes in beliefs *and* desensitization. Put differently, over time, our beliefs become "hardwired" into our brain, increasing accessibility, but this also can mean that we often do not realize we hold those beliefs anymore (they become automated), and we also are not often surprised by or tuned in to messages that simply repeat those beliefs. Future research should aim to explore and compare a single intense message exposure with a longitudinal process that presents varied messages with the same underlying content.

Another limitation to this study was in the non-inclusion of issue involvement and/or a measure that determined how much experience participants had with either topic. As described earlier, future research should remedy this oversight and look to the issue involvement and contact hypothesis literature for guidance.

Third major limitation is found in this study's statistical analyses. Although I was able to conclude that threat is, in fact, related to stigma, responsibility, blame, and discrimination, I was not able to determine the order in which that process occurs. Due to time constraints, I used series of multiple regressions to establish association, but directionality and multiple mediation was not possible without the use of structural equation modeling (SEM). This study should be reexamined using SEM for a better picture of *how* these variables relate to one another (beyond

that they do). Additionally, using SEM would allow me to check for latent constructs in the future.

Another final, but minor, limitation lies with the means in the vaping topic, which may have been slightly elevated because of the successful manipulation of two conditions. Again, these manipulations were not consistent enough to continue the project as experimental, but it may have had a minor impact on threat means.

Conclusion

This chapter explored study results' practical implications and suggested future scholarly work based on those results. Additionally, limitations of this study were addressed and remedies were explored and explicated. The next, and final chapter, of this dissertation aims to answer, perhaps, the most important question from this study: how do we communicate health dangers to the public without inadvertently creating and reinforcing stigma towards those who engage in dangerous behaviors?

Chapter Seven: Conclusion

This project demonstrated the potential for high levels of perceived threat (possibly driven by EPPM or other fear appeal messages) to lead to stigma perceptions, blame, and discrimination. Further, this threat can lead to perceptions of personal controllability, negative emotions toward people who enact a given behavior, and stereotypes about those people. Although some scholars argue that stigmatizing a particular behavior (and, thus, by default the people who do it), is positive for overall public health by changing norms (e.g., Bayer, 2008; Smith, Ferrara, & Witte, 2007) others argue that these means do not justify the ends (e.g., Guttman, 2000). This final chapter will discuss the project's implications for unintended outcomes and ethics and suggest ways in which we can educate the public without stigmatizing people who engage in negative health behaviors.

The ethical dilemma

As public health scholars and practitioners, our primary goals are to educate, spread awareness, and guide people to making healthy behavioral decisions. This can be achieved with a number of communicative efforts, including fear appeals. On its face it's a valid idea; if you frighten people about a behavior, they are less likely to do it, right? However, research shows that using fear appeals does not always (nor often, depending on the behavior) motivate people to change. Further, for people who do not engage in the behavior, viewing these scary messages may lead to the creation or maintenance of stigma towards those who do them. If one takes a "greater good" perspective, this is not necessarily a negative occurrence; as social norms regarding a health behavior change, it puts pressure on people to comply with those norms so they are not sanctioned or ostracized. However, from a holistic perspective, this results in pockets of the population that perhaps need the most help and are less likely to receive it.

Obviously, messages and public health efforts need to convey the seriousness of particular health behaviors. On the other hand, by doing so in a ham-fisted way, it causes unintended, and arguably, unethical stigmatization and segregations for groups most at risk. This dilemma leads naturally to a key question: how do we inform the public without stigmatizing? I argue that there are three ways to accomplish this.

First, the public should be made aware of the complexities of health behaviors, especially those associated with addiction. This nation does not view addiction as a disease; instead, it is often seen as a moral failing. Addiction changes the chemical composition of one's brain, and when these biochemical changes are coupled with social complexities, cessation is a difficult feat. Even those who succeed in quitting smoking, for example, have high relapse rates. The oversimplified messages disseminated to the public to "just say no" or "quit" fail to fully educate the public on the reasons why people engage in these dangerous behaviors or struggle to stop. By avoiding obfuscation and increasing education, the public may begin to view health behaviors in a more compassionate way.

Second, especially for health threats that are well known, campaigns could be reframed and targeted toward *secondary* audience members to help others. By framing marginalized groups as those in need of support and help, and suggesting concrete ways to do so, it is possible we could change society's orientation toward negative health behaviors. Some research has even shown that the EPPM can be used to appeal to helping *others* who are in danger. For example, Barnett and colleagues (2009) found that EPPM messages increased public health workers' willingness to respond to flu pandemic. More specifically, their findings supported the original EPPM propositions, illustrating that messages high in threat (to others) and high in efficacy (for self) resulted in the most "concerned and confident" workers, which was significantly related to

their willingness to help (Barnett et al., 2009). Two more studies authored by combinations of Barnett, Balicer and other colleagues found the same results. Overall, EMS workers who were "concerned" and "confident" after message exposure were more likely to respond to an influenza outbreak (Barnett et al., 2010). Further, a study to determine whether hospital workers would respond in the same way as public health workers and EMS personnel during flu pandemic confirmed similar results, although these findings were mediated by workplace attitudes (Balicer et al., 2010). Other health professionals have been the subjects of similar EPPM research. For example, when presented with EPPM messages with high threat to patients and high efficacy for selves, physicians were more likely to order screening for kidney disease (Roberto et al., 2010).

Although all of these studies targeted health care workers and involved a health condition with little stigma attached, it does demonstrate the possibility of using the EPPM for good. By underscoring the threat to *others* and arming the public with efficacy to help *others*, it is possible to motivate the broader public to help those who engage in negative health behaviors or possess health conditions. Getting involved and helping others often involves having to remove distance to do so, which also may help to re-humanize marginalized groups. Future research should determine whether the EPPM can be used in this way for broader health topics among the greater population.

Finally, one way to both educate the public of the threats of dangerous behaviors but to destigmatize them as well is to change our community and social policies. System activation often creates a domino effect of social sanctions and policies related to particular health behaviors, reifying to the public that these people are stupid, dangerous, or disgusting. It is a well-known fact that our nation currently has a heroin epidemic; it is also well-known that many prisoners are jailed for drug use. Being arrested is an extremely public form of public

condemnation and reinforces that people who engage in particular dangerous health behaviors *should be separated and punished*. However, some locations are attempting to change the way in which communities view topics like addiction. For example, Cooperstown, New York has instated a new "amnesty" program in which people who use heroin are not only granted amnesty for charges, but are provided addiction assistance within twenty-four hours of contact. The only catch? People who want help must come to the police station. Once there, they will be helped instead of arrested (Thompson, 2015). This model sets a different example for citizens of Cooperstown; they are attempting to destigmatize heroin users, providing an opportunity for those who want help to come forward, to be treated as people with a problem instead of socially stigmatized, and dehumanized, dangers to society. This touches on two facets of stigma, one from the perspective of the stigmatized and one from the perspective of the larger community.

For those who do heroin, this program provides the opportunity to come forward without judgment or consequences, the fear of which are two primary reasons that people with addictions often do not seek help (Earnshaw & Quinn, 2012). For the community, the police are providing a model of compassion and inclusion, as opposed to separation and punishment. With a city institution setting the tone for attitudes toward people with addiction, the wider community may start to follow their example and seek to help others instead of vanquish them. This approach has also been implemented in areas of coastal Massachusetts. Although cities and states determine their own programs and responses to health threats, an entire nation that creates a new trajectory for system activation may make huge strides in reducing stigma, improving help-seeking, and increasing reintegration of stigmatized groups.

As communication scholars and practitioners, we are able to use communication to further embed current trends or to create new and different trajectories within the health realm.

Whether via public health messages, advice to policy makers, or community interventions, the way we communicate about health behaviors, especially those deemed dangerous, has short and long-term implications on individual and global levels. Although some scholars argue that fear appeal messages work to change social norms and stigma pressures people into conformity, this is not our only option. For too long, we have relied on fear appeals to change health trends over time, but the communication should not stop there. Through education, policy changes, and even a different use of the EPPM, it is possible to both warn the public *and* to encourage them to help, instead of distance themselves, from those who are struggling.

Conclusion

This chapter has briefly reviewed the ethical dilemmas present in health communication efforts, as well as presented ideas as to how communication may be used to change current patterns and avoid moral judgments. Communication scholars and practitioners should never be satisfied with the status quo of health messages; complacency breeds embedded public opinions and attitudes that are difficult to change and may harm some of the most vulnerable in the population. Our jobs are to consistently look for new ways to communicate with the public that improve overall health outcomes *and* create a society of compassion, inclusivity, and assistance. This study has demonstrated some of the negative consequences related to threat perceptions. There are many ways to create messages that inform but do not stigmatize, that warn but encourage helping behaviors; public health messages should evolve and change with each health behavior and aim to assist *all* community members.

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Appendix A: Tables and Figures

Table 5

Descriptive Statistics for Pretest (Smoking)

Descriptive Statistics

	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Severity 1	303	2.00	7.00	6.43	.96
Severity 2	303	2.00	7.00	6.51	.87
Severity 3	302	3.00	7.00	6.56	.77
Susceptibility 1	300	3.00	7.00	6.62	.69
Susceptibility 2	299	2.00	7.00	6.38	.91
Susceptibility 3	298	3.00	7.00	6.58	.76
Self-efficacy 1	302	1.00	7.00	5.55	1.46
Self-efficacy 2	301	1.00	7.00	3.45	1.79
Self-efficacy 3	302	1.00	7.00	3.56	1.97
Response eff. 1	302	1.00	7.00	6.27	1.10
Response eff. 2	301	1.00	7.00	6.15	1.12
Response eff. 3	303	1.00	7.00	6.22	1.08
Mean efficacy	303	2.00	7.00	5.53	.89
Mean threat	303	3.50	7.00	6.50	.71

Table 6

Descriptive Statistics for Pretest (Vaping)

	N	*Range*	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Severity 1	456	6.00	1.00	7.00	4.85	1.75
Severity 2	457	6.00	1.00	7.00	5.01	1.76
Severity 3	454	6.00	1.00	7.00	5.09	1.73
Susceptibility 1	456	6.00	1.00	7.00	5.50	1.43
Susceptibility 2	456	6.00	1.00	7.00	5.27	1.42
Susceptibility 3	454	6.00	1.00	7.00	5.52	1.43
Self-efficacy 1	456	6.00	1.00	7.00	5.40	1.52
Self-efficacy 2	457	6.00	1.00	7.00	4.43	1.65
Self-efficacy 3	457	6.00	1.00	7.00	4.00	1.67
Response eff. 1	458	6.00	1.00	7.00	5.90	1.25
Response eff. 2	457	6.00	1.00	7.00	5.80	1.24
Response eff. 3	458	6.00	1.00	7.00	5.86	1.20
Mean efficacy	458	6.00	1.00	7.00	5.20	1.42
Mean threat	458	5.50	1.50	7.00	5.23	.96

Table 7

Chronbach's Reliabilities on Pretest Measures (Smoking)

Measure	Chronbach's Alpha	N Items
Severity	.94	3
Susceptibility	.85	3
Self-efficacy	.65	3
Response-efficacy	.87	3
Threat total	.92	6
Efficacy total	.71	6

Table 8

Chronbach's Reliabilities on Pretest Measures (Vaping)

Measure	Chronbach's Alpha	N Items
Severity	.97	3
Susceptibility	.93	3
Self-efficacy	.74	3
Response-efficacy	.93	3
Threat total	.95	6
Efficacy total	.75	6

Table 9

Condition Differences for Pretest Manipulation of Threat (Smoking)

					95% Confidence Interval	
		Mean differences	*Std. Error*	*Sig.*	*Lower Bound*	*Upper Bound*
Control	high threat	.06	.10	.80	-.17	.30
	low threat	.16	.10	.27	-.08	.39
high threat	control	-.06	.10	.80	-.30	.17
	low threat	.09	.10	.62	-.14	.33
low threat	control	-.16	.10	.27	-.39	.08
	high threat	-.09	.10	.62	-.33	.14

Tukey's post hoc test
Mean differences significant at $p < .05$.

Table 10

Condition Differences for Pretest Manipulation of Threat (Vaping)

					95% Confidence Interval	
		Mean differences	*Std. Error*	*Sig.*	*Lower Bound*	*Upper Bound*
low threat	high threat	-.45	.16	.00	-.93	-.20
	control	.17	.16	1.0	-.37	.40
high threat	low threat	.45	.16	.00	.20	.93
	control	.62	.16	.00	.20	.96
Control	low threat	-.17	.16	1.0	-.40	.37
	high threat	-.62	.16	.00	-.96	-.20

Tukey's post hoc test
Mean differences significant at p < .05.

Table 11

Condition Differences for Pretest Manipulation of Efficacy (Smoking)

					95% Confidence Interval	
		Mean differences	*Std. Error*	*Sig.*	*Lower Bound*	*Upper Bound*
Control	high eff	.07	.13	.83	-.22	.37
	low eff	.19	.13	.31	-.11	.48
high eff	control	-.07	.13	.83	-.37	.22
	low eff	.11	.13	.64	-.18	.41
low eff	control	-.19	.13	.31	-.48	.12
	high eff	-.11	.13	.64	-.41	.18

Tukey's post hoc test
Mean differences significant at p < .05.

Table 12

Condition Differences for Pretest Manipulation of Efficacy (Vaping)

					95% Confidence Interval	
		Mean differences	*Std. Error*	*Sig.*	*Lower Bound*	*Upper Bound*
low efficacy	high efficacy	.09	.11	.81	-.19	.32
	control	.17	.11	.35	-.11	.42
high efficacy	low efficacy	-.09	.11	.81	-.32	.19
	control	.08	.11	.70	-.17	.35
Control	low efficacy	-.17	.11	.35	-.42	.11
	high efficacy	-.08	.11	.70	-.35	.17

Tukey's post hoc test
Mean differences significant at p < .05.

Table 13

Threat Mean Differences Between Primary and Secondary Audiences in Pretest (Smoking)

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	9.835	1	9.835	20.573	.000
Within Groups	143.896	301	.478		
Total	153.731	302			

Mean differences significant at p < .05

Table 14

Threat Mean Differences Between Primary and Secondary Audiences in Pretest (Vaping)

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	129.389	1	129.389	61.146	.000
Within Groups	1132.095	535	2.116		
Total	1261.484	536			

Mean differences significant at p < .05

Table 15

Efficacy Mean Differences Between Primary and Secondary Audiences in Pretest (Smoking)

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	10.309	1	10.309	13.446	.000
Within Groups	230.762	301	.767		
Total	241.071	302			

Mean differences significant at p < .05

Table 16

Efficacy Mean Differences Between Primary and Secondary Audiences in Pretest (Vaping)

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	6.424	1	6.424	7.045	.008
Within Groups	487.845	535	.912		
Total	494.269	536			

Mean differences significant at p < .05

Table 17

Main Study Sample Frequencies and Descriptive Statistics – Age

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	18-25	213	17.3	17.3	17.3
	26-35	408	33.1	33.2	50.5
	36-45	291	23.6	23.7	74.1
	46-55	173	14.0	14.1	88.2
	56-65	122	9.9	9.9	98.1
	65+	23	1.9	1.9	100.0
	Total	1230	99.8	100.0	

Table 18

Main Study Sample Frequencies and Descriptive Statistics – Gender

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	Male	439	35.6	35.6	35.6
	Female	789	64.0	64.0	99.7
	Other	4	.3	.3	100.0
	Total	1232	99.9	100.0	

Table 19

Main Study Sample Frequencies and Descriptive Statistics – Race

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	White	988	80.1	80.3	80.3
	Black	87	7.1	7.1	87.4
	Latino	53	4.3	4.3	91.7
	Asian	57	4.6	4.6	96.3
	Multi	32	2.6	2.6	98.9
	Other	13	1.1	1.1	100.0
	Total	1230	99.8	100.0	

Table 20

Main Study Sample Frequencies and Descriptive Statistics – Education

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	< HS	2	.2	.2	.2
	HS OR GED	99	8.0	8.0	8.2
	Some college	385	31.2	31.3	39.5
	College degree	528	42.8	42.9	82.4
	Graduate degree	216	17.5	17.6	100.0
	Total	1230	99.8	100.0	

Table 21

Main Study Sample Frequencies and Descriptive Statistics – Income

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	<25K	240	19.5	19.6	19.6
	25-50K	370	30.0	30.2	49.7
	50-75k	287	23.3	23.4	73.1
	75-100K	175	14.2	14.3	87.4
	100+K	155	12.6	12.6	100.0
	Total	1227	99.5	100.0	

Table 22

Main Study Sample Frequencies and Descriptive Statistics – Condition

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	Smoking control	136	11.0	11.0	11.0
	Smoking no threat/high efficacy	153	12.4	12.4	23.4
	Smoking high threat/no efficacy	148	12.0	12.0	35.4
	Smoking high threat/high efficacy	139	11.3	11.3	46.7
	Vaping control	166	13.5	13.5	60.2
	Vaping no threat/high efficacy	159	12.9	12.9	73.1
	Vaping high threat/no efficacy	168	13.6	13.6	86.7
	Vaping high threat/high efficacy	164	13.3	13.3	100.0
	Total	1233	100.0	100.0	

Table 23

Main Study Sample Frequencies and Descriptive Statistics – Smoking Behavior

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	Smoke	165	20.7	20.9	20.9
	Non-smoke	633	78.1	79.1	100.0
	Total	798	98.8	100.0	

Table 24

Main Study Sample Frequencies and Descriptive Statistics – Vaping Behavior

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	Vape	167	20.7	20.7	20.7
	Non-vape	639	79.1	79.3	100.0
	Total	806	99.8	100.0	

Table 25

Main Study Perceived Threat Descriptive Statistics by Experimental Condition

	N	*Mean*	*Std. Deviation*	*Std. Error*	*95% Confidence Interval for Mean* *Lower Bound*	*Upper Bound*	*Min*	*Max*
Smoking Control	136	6.28	.99	.09	6.11	6.44	1	7
Smoking no threat/high efficacy	153	6.45	.76	.06	6.32	6.57	3	7
Smoking high threat/no efficacy	148	6.50	.78	.06	6.37	6.62	4	7
Smoking high threat/high efficacy	139	6.53	.69	.06	6.41	6.65	3	7
Vaping control	166	4.85	1.47	.11	4.62	5.07	1	7
Vaping no threat/high efficacy	159	4.84	1.63	.13	4.58	5.10	1	7
Vaping high threat/no efficacy	168	5.26	1.50	.12	5.03	5.49	1	7
Vaping high threat/high efficacy	164	5.29	1.47	.12	5.06	5.52	1	7
Total	1233	5.71	1.42	.04	5.63	5.78	1	7

Table 26

Main Test Manipulation Checks for All Topics – Threat

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	617.401	7	88.200	57.553	.000
Within Groups	1877.316	1225	1.533		
Total	2494.717	1232			

Table 27

Post Hoc Analysis of Main Study Smoking Condition Differences on Threat

					95% Confidence Interval	
		Mean differences	*Std. Error*	*Sig.*	*Lower Bound*	*Upper Bound*
Smoking control	No threat/high efficacy	-.17	.15	.94	-.61	.27
	High threat/no efficacy	-.22	.15	.81	-.67	.23
	High threat/high efficacy	-.25	.15	.68	-.71	.20
Smoking no threat/high efficacy	Control	.17	.15	.94	-.27	.61
	High threat/no efficacy	-.05	.14	1.00	-.48	.38
	High threat/high efficacy	-.08	.15	1.00	-.52	.36
Smoking high threat/no efficacy	Control	.22	.15	.81	-.23	.67
	No threat/high efficacy	.51	.14	1.00	-.38	.48
	High threat/high efficacy	-.03	.15	1.00	-.48	.41
Smoking high threat/high efficacy	Control	.254	.15	.68	-.20	.71
	No threat/high efficacy	.08	.15	1.00	-.36	.52
	High threat/no efficacy	.03	.15	1.00	-.41	.48

*Tukey's post hoc test, *p<.05*

Table 28

Post Hoc Analysis of Main Study Vaping Condition Differences on Threat

					95% Confidence Interval	
		Mean differences	*Std. Error*	*Sig.*	*Lower Bound*	*Upper Bound*
Vaping control	No threat/high efficacy	.01	.14	1.00	-.41	.43
	High threat/no efficacy	-.41*	.14	.05	-.82	.00
	High threat/high efficacy	-.44*	.14	.03	-.85	-.03
Vaping no threat/high efficacy	Control	-.01	.14	1.00	-.43	.41
	High threat/no efficacy	-.42*	.14	.05	-.84	.00
	High threat/high efficacy	-.45*	.14	.03	-.87	-.03
Vaping high threat/no efficacy	Control	.41*	.14	.05	.00	.82
	No threat/high efficacy	.42*	.14	.05	.00	.84
	High threat/high efficacy	-.03	.14	1.00	-.44	.38
Vaping high threat/high efficacy	Control	.44*	.14	.03	.03	.85
	No threat/high efficacy	.45*	.14	.03	.03	.87
	High threat/no efficacy	.03	.14	1.00	-.38	.44

*Tukey's post hoc test, *p<.05*

Table 29

Main Test Manipulation Checks for All Conditions - Efficacy

	Sum of Squares	*df*	*Mean Square*	*Sig.*
Between Groups	8.22	7	1.17	.28
Within Groups	1162.99	1225	.95	
Total	1171.21	1232		

Table 30

Descriptive Statistics for Main Study Variables (Smoking)

	N	*Range*	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Threat	576	6	1	7	6.44	.81
Efficacy	576	5	2	7	5.13	.91
Controllability	574	6	1	7	6.15	1.04
Att 1 (Genes)	574	6	1	7	2.13	1.40
Att 2 (Environ)	574	6	1	7	5.42	1.48
Att 3 (Stress)	573	6	1	7	5.14	1.45
Att 4 (Charact)	573	6	1	7	3.58	1.78
Stigma	576	6	1	7	3.68	1.02
Neg. emotion	576	6	1	7	3.16	1.64
Stereotypes	576	6	1	7	3.83	1.33
Blame	575	6	1	7	5.25	1.36
Discrimination	576	6	1	7	3.85	1.22

Table 31

Descriptive Statistics for Main Study Variables (Vaping)

	N	*Range*	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Threat	657	6	1	7	5.06	1.53
Efficacy	657	6	1	7	5.16	1.03
Controllability	657	6	1	7	6.28	1.03
Att 1 (Genes)	656	6	1	7	1.88	1.32
Att 2 (Environ)	657	6	1	7	4.42	1.83
Att 3 (Stress)	657	6	1	7	4.65	1.57
Att 4 (Charact)	654	6	1	7	3.18	1.77
Stigma	657	6	1	7	3.24	1.11
Emo	657	6	1	7	2.47	1.56
Stereotypes	656	6	1	7	3.57	1.45
Blame	653	6	1	7	5.43	1.36
Discrimination	657	6	1	7	3.59	1.38

Table 32

Correlational Table for All Main Study Variables - Smoking

	Disc	Blame	Emo	Stereo	Stigma	Control	Att (genes)	Att (enviro)	Att (stress)	Att (charact)	Threat	Efficacy
Disc	1.00											
Blame	.308**	1.00										
Emo	.490**	.237**	1.00									
Stereo	.496**	.256**	.478**	1.00								
Stigma	.510**	.106*	.321**	.455**	1.00							
Control	0.04	.514**	0.002	0.06	-0.08	1.00						
Att (genes)	.127**	-.047	.126**	.198**	.192**	-.236**	1.00					
Att (enviro)	0.06	.105*	0.035	.131**	0.07	0.04	0.03	1.00				
Att (stress)	.094*	.101*	.084*	0.05	0.02	0.141**	0.07	.359**	1.00			
Att (charact)	.432**	.321**	.357**	.460**	.313**	.120**	.248**	.102*	0.124**	1.00		
Threat	0.17	.154**	0.097*	.160**	-0.02	.325**	-.147**	.104*	.134**	0.05	1.00	
Efficacy	.124**	.287**	.159**	.152**	0.02	.294**	-.014	0.014	0.03	.174**	.384**	1.00

* $p = .05$

** $p = .01$

Table 33

Correlational Table for All Main Study Variables - Vaping

	Disc	Blame	Emo	Stereo	Stigma	Control	Att (genes)	Att (enviro)	Att (stress)	Att (char)	Threat	Eff
Disc	1.00											
Blame	.30**	1.00										
Emo	.480**	.177**	1.00									
Stereo	.616**	.250**	.495**	1.00								
Stigma	.706**	.164**	.437**	.601**	1.00							
Control	0.01	.507**	-0.078*	0.04	-.096*	1.00						
Att (genes)	.199**	-.094	.295**	.278**	.320**	-.338**	1.00					
Att (enviro)	.225**	0.035	.178**	.236**	.180**	.079*	.192**	1.00				
Att (stress)	0.03	0.044	.114**	0.05	0.03	.100*	.151**	.385**	1.00			
Att (char)	.531**	.244**	.473**	.589**	.567**	0.02	.452**	.280**	0.236**	1.00		
Threat	.437**	.230**	.213**	.304**	.248**	.201**	0.004	.167**	.105**	.267**	1.00	
Eff	.101**	.317**	0.007	0.095	-.007	.311**	-.072	0.06	0.06	.129**	.369**	1.00

*$p = .05$

**$p = .01$

Table 34

Difference in Environmental Outcome Based on Vaping Threat Conditions – Descriptive Statistics

	N	*Mean*	*Std. Deviation*	*Std. Error*	*95% Confidence Interval for Mean* *Lower Bound*	*Upper Bound*	*Min*	*Max*
Vaping control	166	4.08	1.87	.15	3.79	4.36	1	7
Vaping no threat/high efficacy	159	4.28	1.94	.15	3.98	4.59	1	7
Vaping high threat/no efficacy	168	4.51	1.74	.14	4.25	4.78	1	7
Vaping high threat/high efficacy	164	4.79	1.69	.13	4.53	5.05	1	7
Total	657	4.42	1.82	.07	4.28	4.56	1	7

Table 35

Differences in Environmental Attribution Based on Vaping Threat Conditions - ANOVA

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	46.56	3	15.52	4.73	.00
Within Groups	2143.17	653	3.28		
Total	2189.73	656			

Table 36

Differences in Environmental Attribution Based on Vaping Threat Conditions – Post Hoc Tests

					95% Confidence Interval	
		Mean Difference	*Std. Error*	*Sig.*	*Lower Bound*	*Upper Bound*
Vaping control	No threat/high efficacy	-.21	.20	.74	-.72	.31
	High threat/no efficacy	-.43	.20	.13	-.94	.08
	High threat/high efficacy	-.71*	.20	.00	-1.23	-.20
Vaping no threat/high efficacy	Control	.21	.20	.74	-.31	.72
	High threat/no efficacy	-.23	.20	.66	-.75	.29
	High threat/high efficacy	-.51	.20	.06	-1.03	.01
Vaping high threat/no efficacy	Control	.43	.20	.13	-.08	.94
	No threat/high efficacy	.23	.20	.66	-.29	.75
	High threat/high efficacy	-.28	.20	.49	-.79	.23
Vaping high threat/high efficacy	Control	.71*	.20	.00	.20	1.23
	No threat/high efficacy	.51	.20	.06	-.01	1.03
	Vaping high threat/no efficacy	.28	.20	.49	-.23	.79

Note. Tukey's post hoc test

* The mean difference is significant at the 0.05 level.

Table 37

Direct Effects of Threat on Stigma (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.01	---	2.89
Income	-.01			
Age	-.01			
Race	-.02			
Education	.17**			
Step 2: Perceived threat	-.02	.01	.00	2.37

Note. p = n.s.; *p < .05, **p < .01

Table 38

Direct Effects of Threat on Stigma (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.02	---	4.190
Income	.01			
Age	-.01			
Race	.00			
Education	*.10			
Step 2: Perceived threat	**.242	.07	.06	11.359

Note. p = .00.; *p < .05, **p < .01

Table 39

Direct Effects of Stigma on Discrimination (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	---	1.40
Income	.01			
Age	-.05			
Race	.01			
Education	*.09			
Step 2: Stigma	**.51	.26	.26	40.78

Note. p = .00.; *p < .05, **p < .01

Table 40

Direct Effects of Stigma on Discrimination (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.05	.06	10.22
Income	**.17			
Age	.02			
Race	.01			
Education	**.13			
Step 2: Stigma	**.51	.52	.46	140.19

Note. $p = .00$.; *$p < .05$, **$p < .01$

Table 41

Indirect Effects of Controllability as a Mediator of Threat and Stigma (Vaping)

Indirect effect of threat on stigma				
	Effect	Boot SE	BootLLCI	BootULCI
Control	-.0175	0.0071	-.0350	-.0068

Normal theory tests for indirect effect			
Effect	se	Z	P
-.0175	0.0063	-2.7787	0.0055

Table 42

Indirect Effects of Environmental Attribution as a Mediator of Threat and Stigma (Vaping)

Indirect effect of threat on stigma				
	Effect	Boot SE	BootLLCI	BootULCI
Att 2	0.0154	0.0068	0.005	0.0328

Normal theory tests for indirect effect			
Effect	se	Z	p
0.0154	0.0061	2.5229	0.0116

Table 43

Indirect Effects of Weak Character Attribution as a Mediator of Threat and Stigma (Vaping)

Indirect effect of threat on stigma				
	Effect	Boot SE	BootLLCI	BootULCI
Att 4	0.1077	0.0160	0.0779	0.1410

Normal theory tests for indirect effect			
Effect	se	Z	P
0.1077	0.0164	6.5735	0.0000

Table 44

Regression Comparing Responsibility Constructs on Negative Emotions (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	.00	1.14
Income	-.04			
Age	-.08			
Race	.01			
Education	.02			
Step 2: Controllability	.01	.00	.00	.935
Step 3: Attribution 1 (Genetics)	**.13	.01	.02	2.24
Step 4: Controllability X Att 1	-.29	.01	.00	2.14
Step 5: Attribution 4 (Character)	**.36	.13	.11	11.15
Step 6: Controllability X Att 4	.18	.13	.00	9.94

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

Table 45

Regression Comparing Responsibility Constructs on Stereotypes (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.02	.02	3.42
Income	-.01			
Age	-.04			
Race	.02			
Education	**.15			
Step 2: Controllability	.07	.02	.01	3.33
Step 3: Attribution 1 (Genetics)	**.23	.07	.05	7.77
Step 4: Controllability X Att 1	.02	.07	.00	6.57
Step 5: Attribution 2 (Environment)	**.10	.07	.01	6.59
Step 6: Controllability X Att 2	-.32	.07	.00	5.97
Step 7: Attribution 4 (Character)	**.43	.23	.16	18.07
Step 8: Controllability X Att 4	-.16	.23	.00	16.44

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

Table 46

Regression Comparing Responsibility Constructs on Blame (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	.01	1.21
Income	*.09			
Age	-.02			
Race	.04			
Education	-.03			
Step 2: Controllability	**.53	.27	.27	42.81
Step 3: Attribution 2 (Environment)	*.08	.28	.01	36.85
Step 4: Controllability X Att 2	-.43	.28	.00	31.98
Step 5: Attribution 4 (Character)	**.25	.34	.06	36.72
Step 6: Controllability X Att 4	-.24	.34	.00	32.73

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

Table 47

Regression Comparing Responsibility Constructs on Discrimination (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	.01	1.35
Income	.01			
Age	-.04			
Race	.01			
Education	*.09			
Step 2: Controllability	.05	.00	.00	1.33
Step 3: Attribution 1 (Genetics)	**.15	.02	.02	3.16
Step 4: Controllability X Att `1	-.23	.02	.00	2.85
Step 5: Attribution 4 (Character)	**.42	.19	.16	16.88
Step 6: Controllability X Att 4	-.22	.18	.00	15.00

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

Table 48

Regression Comparing Responsibility Constructs on Stigma (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.02	.02	4.09
Income	**.12			
Age	-.01			
Race	.00			
Education	*.08			
Step 2: Controllability	*-.10	.03	.01	4.53
Step 3: Attribution 1 (Genetics)	**.32	.12	.09	15.06
Step 4: Controllability X Att `1	.27	.12	.00	13.21
Step 5: Attribution 2 (Environment)	**.11	.13	.01	12.77
Step 6: Controllability X Att 2	.12	.13	.00	11.36
Step 7: Attribution 4 (Character)	**.54	.34	.21	33.72
Step 8: Controllability X Att 4	-.18	.33	.00	30.67

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

Table 49

Regression Comparing Responsibility Constructs on Emotion (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.02	.02	3.78
Income	.05			
Age	**-.10			
Race	-.01			
Education	*.09			
Step 2: Controllability	-.07	.02	.00	3.61
Step 3: Attribution 1 (Genetics)	**.30	.10	.08	12.33
Step 4: Controllability X Att `1	.05	.09	.00	10.56
Step 5: Attribution 2 (Environment)	**.11	.10	.01	10.22
Step 6: Controllability X Att 2	.28	.10	.00	9.20
Step 7: Attribution 4 (Character)	**.42	.23	.13	20.48
Step 8: Controllability X Att 4	-.16	.23	.00	18.63

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

Table 50

Regression Comparing Responsibility Constructs on Stereotypes (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.04	.04	6.89
Income	*.10			
Age	-.06			
Race	.00			
Education	**.15			
Step 2: Controllability	.06	.04	.00	5.93
Step 3: Attribution 1 (Genetics)	**.31	.12	.08	15.64
Step 4: Controllability X Att `1	-.14	.12	.00	13.47
Step 5: Attribution 2 (Environment)	**.15	.14	.02	13.94
Step 6: Controllability X Att 2	.20	.14	.00	12.44
Step 7: Attribution 4 (Character)	**.55	.36	.22	37.27
Step 8: Controllability X Att 4	.39	.36	.00	34.16

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

Table 51

Regression Comparing Responsibility Constructs on Blame (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.01	.02	2.79
Income	*.09			
Age	*.08			
Race	.05			
Education	.01			
Step 2: Controllability	**.51	.26	.25	45.85
Step 3: Attribution 1 (Genetics)	*.08	.26	.01	39.35
Step 4: Controllability X Att `1	.12	.26	.00	33.77
Step 5: Attribution 4 (Character)	**.25	.31	.05	37.95
Step 6: Controllability X Att 4	.62	.31	.01	33.69

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

Table 52

Regression Comparing Responsibility Constructs on Discrimination (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.05	.05	10.11
Income	**.17			
Age	.03			
Race	.01			
Education	**.13			
Step 2: Controllability	.01	.05	.00	8.08
Step 3: Attribution 1 (Genetics)	**.22	.09	.04	11.85
Step 4: Controllability X Att `1	.02	.09	.00	10.14
Step 5: Attribution 4 (Character)	**.54	.31	.22	37.54
Step 6: Controllability X Att 4	.09	.31	.00	33.33

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

Table 53

Direct Effects of Stigma on Blame (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	.00	1.21
Income	*.09			
Age	-.02			
Race	.04			
Education	-.03			
Step 2: Stigma	**.12	.01	.01	2.64

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

Table 54

Direct Effects of Stigma on Blame (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.01	.01	2.70
Income	*.09			
Age	*.08			
Race	.04			
Education	.08			
Step 2: Stigma	**.15	.03	.02	5.27

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

Table 55

Direct Effects of Blame on Discrimination (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	.00	1.40
Income	.01			
Age	-.05			
Race	.01			
Education	*.09			
Step 2: Stigma	**.31	.10	.10	13.22

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

Table 56

Direct Effects of Blame on Discrimination (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.06	.06	10.78
Income	**.17			
Age	.03			
Race	.00			
Education	**.14			
Step 2: Stigma	**.28	.13	.08	21.04

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

Table 57

Regression Comparing Stigma Constructs on Blame (Smoking)

Variable	B	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	.00	1.21
Income	*.09			
Age	-.02			
Race	.04			
Education	-.03			
Step 2: Stigma	**.12	.01	.01	2.64
Step 3: Negative Emotions	**.22	.06	.04	6.66
Step 4: Stereotypical Thoughts	**.20	.08	.03	8.29
Step 5: Emotions X Stereotypes	.18	.08	.00	7.40

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

Table 58

Regression Comparing Stigma Constructs on Blame (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.01	.01	2.69
Income	*.09			
Age	-.02			
Race	.04			
Education	-.03			
Step 2: Stigma	**.12	.03	.02	5.26
Step 3: Negative Emotions	**.22	.05	.02	6.34
Step 4: Stereotypical Thoughts	**.20	.07	.03	8.08
Step 5: Emotions X Stereotypes	.18	.07	.00	7.30

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

Table 59

Regression Comparing Stigma Constructs on Discrimination (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	.00	1.40
Income	.01			
Age	-.05			
Race	.01			
Education	*.09			
Step 2: Stigma	**.51	.26	.26	40.78
Step 3: Negative Emotions	**.36	.38	.12	57.64
Step 4: Stereotypical Thoughts	**.22	.41	.03	56.06
Step 5: Emotions X Stereotypes	.06	.41	.00	49.01

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

Table 60

Regression Comparing Stigma Constructs on Discrimination (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.05	.05	10.04
Income	**.17			
Age	.03			
Race	.01			
Education	**.13			
Step 2: Stigma	**.69	.52	.46	139.77
Step 3: Negative Emotions	**.22	.55	.04	135.29
Step 4: Stereotypical Thoughts	**.23	.58	.03	130.59
Step 5: Emotions X Stereotypes	.16	.58	.00	114.85

Note. *p < .05, **p < .01

Table 61

Regression Full Model on Blame (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	.01	1.24
Income	*.09			
Age	-.02			
Race	.04			
Education	-.04			
Step 2: Responsibility constructs		.34	.34	35.51
Perceived controllability	**.50			
Attribution 1 (genes)	-.02			
Attribution 2 (environment)	*.08			
Attribution 3 (stress)	-.07			
Attribution 4 (weak character)	**.25			
Step 3: Stigma constructs		.36	.03	27.49
Stigma measure	.03			
Negative emotion	**.12			
Stereotypical thoughts	*.09			

Note. Final model: F (12, 546) = .27.49
p = .00; *p < .05, **p < .01

Table 62

Regression Full Model on Blame (Vaping)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.01	.01	2.79
Income	*.09			
Age	*.09			
Race	.05			
Education	.01			
Step 2: Responsibility constructs		.31	.31	33.88
Perceived controllability	**.50			
Attribution 1 (genes)	-.03			
Attribution 2 (environment)	*-.07			
Attribution 3 (stress)	-.04			
Attribution 4 (weak character)	**.27			
Step 3: Stigma constructs		.34	.02	28.16
Stigma measure	.06			
Negative emotion	**.12			
Stereotypical thoughts	.07			

Note. Final model: F (12, 633) = 28.16
$p = .00$; *$p < .05$, **$p < .01$

Table 63

Regression Full Model on Discrimination (Smoking)

Variable	β	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.00	.00	1.21
Income	.01			
Age	-.04			
Race	.01			
Education	.08			
Step 2: Responsibility constructs		.18	.18	14.70
Perceived controllability	-.01			
Attribution 1 (genes)	.04			
Attribution 2 (environment)	-.01			
Attribution 3 (stress)	.04			
Attribution 4 (weak character)	**.42			
Step 3: Stigma constructs		.43	.25	35.66
Stigma measure	**.30			
Negative emotion	**.25			
Stereotypical thoughts	**.16			
Step 4: Blame	**.17	.44	.02	35.34
Blame for outcomes				

Note. Final model: F (13, 545) = 35.34
$p = .00$; *$p < .05$, **$p < .01$

Table 64

Regression Full Model on Discrimination (Vaping)

Variable	B	*Adj* R^2	R^2 *change*	*F*
Step 1: Demographics and controls		.06	.06	10.48
Income	**.17			
Age	.03			
Race	.00			
Education	**.13			
Step 2: Responsibility constructs		.33	.28	36.13
Perceived controllability	-.03			
Attribution 1 (genes)	-.06			
Attribution 2 (environment)	**.12			
Attribution 3 (stress)	**-.13			
Attribution 4 (weak character)	**.54			
Step 3: Stigma constructs		.59	.26	79.33
Stigma measure	**.47			
Negative emotion	**.15			
Stereotypical thoughts	**.19			
Step 4: Blame	**.14	.61	.01	77.14
Blame for outcomes				

Note. Final model: F (13, 632) = 77.14
$p = .00$; *$p < .05$, **$p < .01$

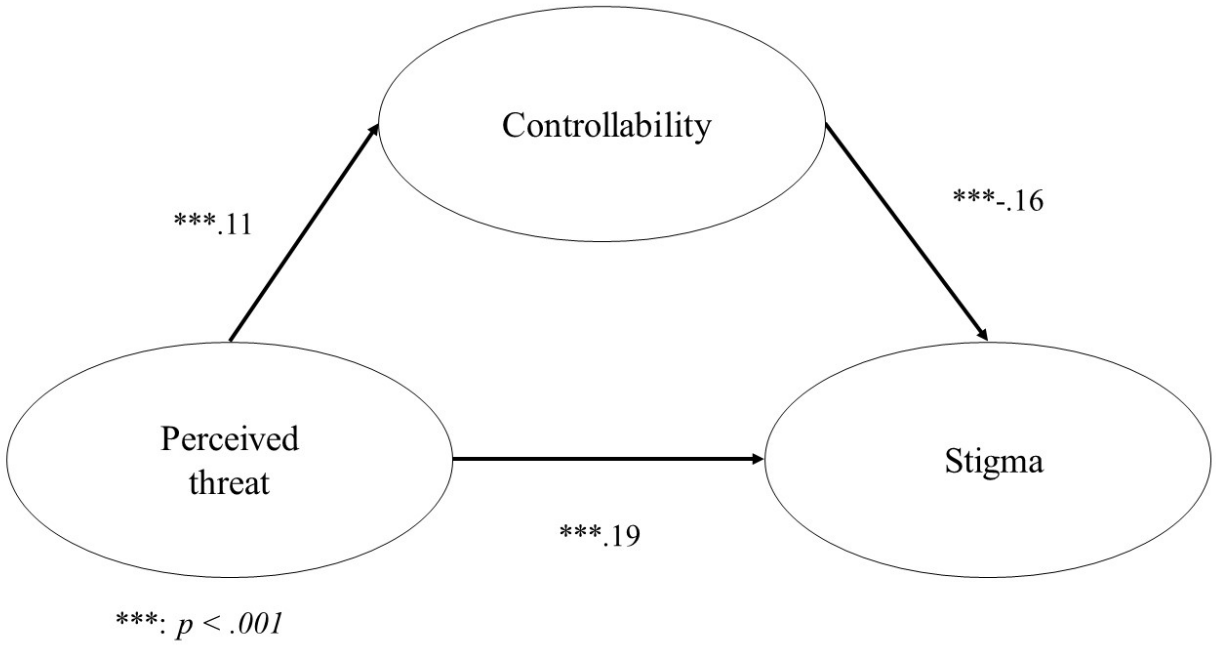

Figure 10. Partial mediation of threat and stigma via controllability (vaping).

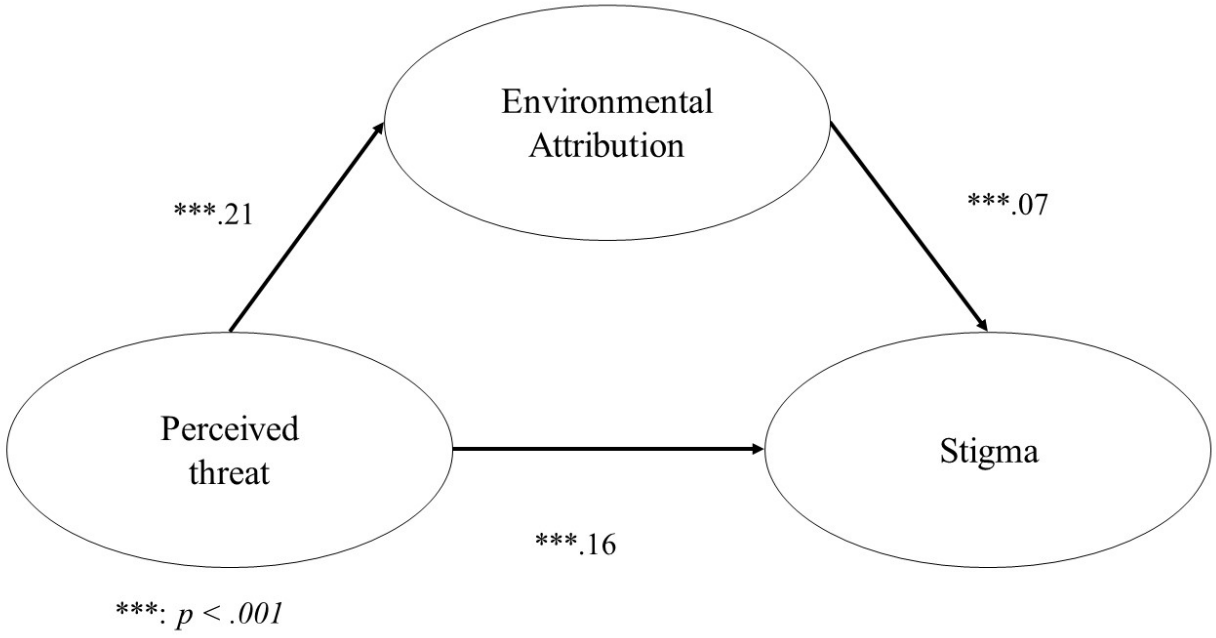

Figure 11. Partial mediation of threat and stigma via environmental attribution (vaping).

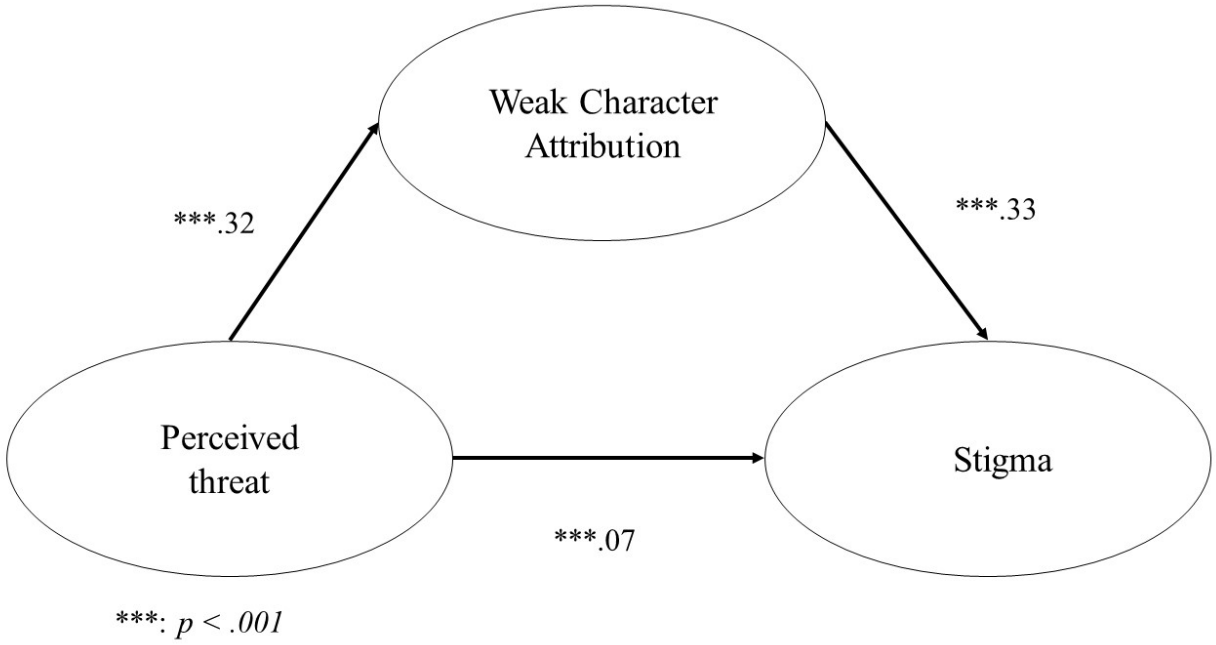

Figure 12. Partial mediation of threat and stigma via weak character attribution (vaping).

Appendix B: Experimental Messages

1. High Threat High Efficacy Smoking Message

****No Threat No Efficacy (control) received no message.**

High Threat No Efficacy Smoking Message

No Threat High Efficacy Smoking Message

****No Threat No Efficacy (control) conditions did not receive a message.**

High Threat High Efficacy Vaping Message

High Threat No Efficacy Vaping Message

No Threat High Efficacy Vaping Message

Appendix C: Survey Measures

Locus of Control (Rotter, 1966)

Instructions: For each number, choose the statement (a or b) you most agree with.

1. a. Children get into trouble because their parents punish them too much.

   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to back luck.

   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.

   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.

   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.

   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks, one cannot be an effective leader.

   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try, some people just don't like you.

   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plays a major role in determining one's personality.

   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.

   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student, there is rarely, if ever, such a thing as an unfair test.

    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence on government decisions.

    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.

    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.

    b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.

    b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

    b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.

    b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

    b. There really is no such thing as "luck."

19. a. One should always be willing to admit mistakes.

    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.

    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.

    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.

    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.

    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.

    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.

b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.

b. There's not much use in trying too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.

b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.

b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.

b. In the long run the people are responsible for bad government on a national, as well as on a local level.

Threat and Efficacy (Risk Behavior Diagnostic Scale; Witte, Cameron, McKeon, & Berkowitz, 1996).

Instructions: Please respond to each item by marking the number that best describes you.

(1 = strongly disagree to 7 = strongly agree)

Threat	*Strongly disagree*						*Strongly agree*
1. I believe that the threat from [smoking/using e-cigarettes] is severe.	1	2	3	4	5	6	7
2. I believe that the threat from [smoking/using e-cigarettes] is serious.	1	2	3	4	5	6	7
3. I believe that the threat from [smoking/using e-cigarettes] is significant.	1	2	3	4	5	6	7
Susceptibility							
1. People who [smoke/vape] are at risk for its health threat.	1	2	3	4	5	6	7
2. It is likely that people who [smoke/vape] will suffer the health consequences.	1	2	3	4	5	6	7
3. It is possible that people who [smoke/vape] will suffer the health consequences.	1	2	3	4	5	6	7
Self-efficacy							
1. People are able to [quit smoking/ quit using e-cigarettes].	1	2	3	4	5	6	7
2. [Quitting smoking/quitting vaping] is easy to do to prevent its health threat.	1	2	3	4	5	6	7
3. [Quitting smoking/quitting vaping] is convenient.	1	2	3	4	5	6	7

Response efficacy

	Strongly disagree						*Strongly agree*
1. [Quitting smoking/quitting vaping] works for preventing its health threat.	1	2	3	4	5	6	7
2. [Quitting smoking/quitting vaping] is effective in preventing the health threat.	1	2	3	4	5	6	7
3. If people [quit smoking/quit using e-cigarettes], they are less likely to have severe consequences.	1	2	3	4	5	6	7

Stereotypes

Instructions: Please respond to each item by marking the number that best describes your first instinct.

(1 = strongly disagree to 7 = strongly agree)

Smokers/Vapers are:

1. Intelligent	1	2	3	4	5	6	7
2. Responsible	1	2	3	4	5	6	7
3. Gross	1	2	3	4	5	6	7
4. Stupid	1	2	3	4	5	6	7
5. Classy	1	2	3	4	5	6	7
6. Attractive	1	2	3	4	5	6	7
7. Approachable	1	2	3	4	5	6	7
8. Losers	1	2	3	4	5	6	7
9. Trashy	1	2	3	4	5	6	7

10. Stupid	1 2 3 4 5 6 7
11. Caring toward others	1 2 3 4 5 6 7
12. Hostile/Aggressive	1 2 3 4 5 6 7
13. Lazy	1 2 3 4 5 6 7
14. Obnoxious	1 2 3 4 5 6 7
15. Irresponsible	1 2 3 4 5 6 7
16. Successful	1 2 3 4 5 6 7
17. Loyal to family and spouses	1 2 3 4 5 6 7
18. Likable	1 2 3 4 5 6 7
19. Promiscuous	1 2 3 4 5 6 7
20. Arrogant	1 2 3 4 5 6 7

Instructions: Please respond to each item by marking the number that best describes your first instinct.

(1 = strongly disagree to 7 = strongly agree)

Stigma Beliefs Measure (adapted from Link et al., 1989)

1. Most people would willingly accept a [smoker /vaper] as a close friend.	1 2 3 4 5 6 7
2. Most people believe that a person who [smokes/vapes] is just as intelligent as the average person.	1 2 3 4 5 6 7
3. Most people believe that a [smoker/vaper] is just as trustworthy as the average citizen.	1 2 3 4 5 6 7
4. Most people would accept a [smoker/vaper] as a teacher of young children in a public school.	1 2 3 4 5 6 7

5. Most people feel that [smoking/using an e-cig] is a sign of personal failure. 1 2 3 4 5 6 7

6. Most people would not hire a [smoker/vaper] to take care of their children. 1 2 3 4 5 6 7

7. Most people think less of a [smoker/vaper]. 1 2 3 4 5 6 7

8. Most employers will hire a [smoker/vaper] if he or she is qualified for the job. 1 2 3 4 5 6 7

9. Most employers will pass over the application of a [smoker/vaper] in favor of another applicant. 1 2 3 4 5 6 7

10. Most people in my community would treat a [smoker/vaper] just as they would treat anyone. 1 2 3 4 5 6 7

11. Most young women would be reluctant to date a man who [smokes/vapes]. 1 2 3 4 5 6 7

12. Once they know a person [is a smoker/uses an e-cig], most people will take his or her opinions less seriously. 1 2 3 4 5 6 7

Attribution (Stuber, Galea, & Link, 2008)

	Strongly disagree						*Strongly agree*
1. People start smoking/vaping due to bad genes.	1	2	3	4	5	6	7
2. People start smoking/vaping due to their environment.	1	2	3	4	5	6	7
3. People start smoking/vaping due to stress.	1	2	3	4	5	6	7
4. People start smoking/vaping due to weak character.	1	2	3	4	5	6	7

Controllability (modified from Smith, 2012)

1. It is people's responsibility if they smoke/vape.	1 2 3 4 5 6 7
2. It is people's own fault for smoking/vaping.	1 2 3 4 5 6 7
3. People are responsible for their own behavior of smoking/ using e-cigarettes.	1 2 3 4 5 6 7
4. No one "forces" people to smoke.	1 2 3 4 5 6 7

Stigma Affect Toward Behavior (Moral emotions scale; Weiner, 2006)

40. Instructions: How do you feel ***<u>about the BEHAVIOR of [SMOKING/ VAPING]</u>****?*

1 = none of this feeling, 7 = A lot of this feeling

	None of this feeling						*A lot of this feeling*
Admiration	1	2	3	4	5	6	7
Good will	1	2	3	4	5	6	7
Anger	1	2	3	4	5	6	7
Gratitude	1	2	3	4	5	6	7
Indignation (outrage)	1	2	3	4	5	6	7
Pleasant	1	2	3	4	5	6	7
Jealousy	1	2	3	4	5	6	7
Joy	1	2	3	4	5	6	7
Regret	1	2	3	4	5	6	7

Schadenfreude (joy at the suffering of others)	1 2 3 4 5 6 7
Scorn (contempt)	1 2 3 4 5 6 7
Shame	1 2 3 4 5 6 7
Sympathy (pity)	1 2 3 4 5 6 7
Disgust	1 2 3 4 5 6 7

Stigma Affect Toward People Who Enact Behavior (Moral emotions scale; Weiner, 2006)

*41. How do you feel <u>TOWARD</u> **<u>PEOPLE WHO SMOKE/USE AN E-CIG</u>**]*

1 = none of this feeling, 7 = A lot of this feeling

Admiration	1 2 3 4 5 6 7
Good will	1 2 3 4 5 6 7
Anger	1 2 3 4 5 6 7
Gratitude	1 2 3 4 5 6 7
Indignation (outrage)	1 2 3 4 5 6 7
Pleasant	1 2 3 4 5 6 7
Jealousy	1 2 3 4 5 6 7
Joy	1 2 3 4 5 6 7
Regret	1 2 3 4 5 6 7
Schadenfreude (joy at the suffering of others)	1 2 3 4 5 6 7
Scorn (contempt)	1 2 3 4 5 6 7
Shame	1 2 3 4 5 6 7

Sympathy (pity)	1 2 3 4 5 6 7
Disgust	1 2 3 4 5 6 7

Blame (modified from Smith, 2012)

Instructions: Please respond to each item by marking the number that best describes you.

(1 = strongly disagree to 7 = strongly agree)

1. It is a [smoker's/vaper's] own fault in they suffer the potential consequences of that behavior.	1 2 3 4 5 6 7
2. It is the sole responsibility of a [smoker/vaper] if they endure the possible consequences of that behavior.	1 2 3 4 5 6 7
3. If a [smoker/vaper] ends up with negative consequences because of their behavior, they deserve it.	1 2 3 4 5 6 7
4. If a [smoker/vaper] ends up with negative consequences because of their behavior, it's their problem.	1 2 3 4 5 6 7

Discriminatory Beliefs and Behaviors

1. I would approach someone for directions who [smokes/ uses an e-cig].	1 2 3 4 5 6 7
2. I would chat with someone who [smokes/uses an e-cig].	1 2 3 4 5 6 7
3. I would befriend someone who [smokes/uses an e-cig].	1 2 3 4 5 6 7
4. I would introduce someone who [smokes/uses an e-cig] to my friends or family.	1 2 3 4 5 6 7
5. I would hang out with or date someone who [smokes/uses an e-cig].	1 2 3 4 5 6 7

6. I would marry someone who [smokes/uses an e-cig].	1	2	3	4	5	6	7
7. I think people who [smoke/vape] shouldn't be hired for some jobs.	1	2	3	4	5	6	7
8. I think there should be bans on [smoking/vaping].	1	2	3	4	5	6	7
9. I think there should be more regulation on [smoking/vaping].	1	2	3	4	5	6	7
10. I think health insurance premiums should be higher for people who [smoke/use an e-cig].	1	2	3	4	5	6	7
11. I think [cigarettes/e-cigarette accessories] should be heavily taxed.	1	2	3	4	5	6	7
12. I think more money should be spent on educational programs to help people who [smoke/vape].	1	2	3	4	5	6	7
13. I don't think people who [smoke/use an e-cig] should be allowed to use Medicaid or Medicare.	1	2	3	4	5	6	7
14. I don't think people who [smoke/use an e-cig] should be allowed to use welfare or food stamps.	1	2	3	4	5	6	7

Existing Health Behaviors (adapted from the CDC National Tobacco Questionnaire)

1. [During the last 30 days, how many days have you had a cigarette, even 1 or 2 puffs?]

   _____

   [During the last 30 days, how many days have you used and electronic cigarette, even 1 or 2 puffs?] _____

Demographics

Instructions: Please mark the answer the following questions:

1. In which age range are you?

A. 18-25 years old

B. 26-35 years old

C. 36-45 years old

D. 46-55 years old

E. 56-65 years old

F. 65+ years old

2. What is your gender?

A. Male

B. Female

C. Other

3. Which race/ethnicity do you most identify with?

A. Caucasian/White

B. African American/Black

C. Latino/Hispanic

D. Asian/Asian American

E. Multi-racial

F. Other

4. What is your educational level? (From Stuber, Galea, & Link)

A. Less than high school

B. High School or GED

C. Some college

D. College graduate

E. Advanced Graduate Degree (for example, MA, MS, PhD, MD, JD, MSW, MPH, EeD)

5. What is your household income?

A. Less than $25,000/yr

B. $25,000 - $50,000/yr

C. $50,000 - $75,000/yr

D. $75,000 - $100,000/yr

E. $100,000+/year