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Credibility of Spokespersons and E-cigarette Prevention Messages: Elaboration Likelihood Model and The Moderating Role of Perceived Risk

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Credibility of Spokespersons and E-cigarette Prevention Messages: Elaboration Likelihood

Model and The Moderating Role of Perceived Risk

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
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possible

Dedication

I also want to dedicate this paper to my late parents, Elder Daniel Maduneme and Elder Susanna

Maduneme, Because of who were, Dad and Mum, I am who I am.

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Abstract

E-cigarettes also referred to as vapes or Electronic Nicotine Delivery Systems (ENDS) were developed as a safer alternative to tobacco smoking, but the prevalent usage among young adults has led to deleterious mental and physical health challenges. Communications interventions against e-cigarette use have employed a variety of message strategies, but one that has not received a lot of attention is the credibility of a spokesperson and the impacts it could have. Grounded in the Elaboration Likelihood Model, the current study aimed to examine the impacts of spokesperson credibility in e-cigarette prevention messages, and the moderating role of perceived risk.

The study employed a posttest-only experimental method with 313 participants. While accounting for their levels of perceived risks, participants were exposed to a credible spokesperson and no credible spokesperson conditions with perceived effectiveness, elaboration, and e-cigarette use attitudes as outcomes.

Findings revealed no significant effects for spokesperson credibility, however, perceived risk predicted significant changes in all criterion variables. The main practical implication is that the use of spokespersons on e-cigarette messages might not be solely enough to achieve attitudinal and behavioral change.

Chapter 1

Introduction

E-cigarettes also referred to as vapes or Electronic Nicotine Delivery Systems (ENDS) were developed as a safer alternative to tobacco smoking (Ayers, Ribisl, & Brownstein, 2011). However, due to a surge in use among young adults in the US, issues relating to the use and marketing of the device are beginning to receive attention from scholars (Gentzke, Creamer, Cullen, Ambrose, Willis, Jamal, & King, 2019). Despite the debate on the safety of e-cigarettes, current data from the Centers for Disease Control (CDC) and scholars show that the product might be responsible for several health hazards among youths. For instance, The Centers for Disease Control has found vaping to be responsible for lung injuries among young people; something they named EVALI (E-cigarette, Vaping related Lung Injury) (CDC, 2019). Furthermore, the CDC reports as of the 14th of February 2020, there were at least 2,807 EVALI cases or deaths emanating from the 50 states of the US with 76% of the cases being within the ages of 18 to 34 (CDC, 2020). There are also other concerns about the use of e-cigarettes by young adults and these concerns are regarding the toxicity of nicotine, a major substance in the products, and its negative impacts on the brains of young people with the same age range (Kong et al., 2016; Dwyer, McQuown, & Leslie, 2009). Little wonder why more attention is given to that specific target population. Numerous studies have credited the prevalence of e-cigarette use among these young adults to the extensive pro-electronic cigarette advertising by the manufacturers of these products (Kong et al, 2016, Grana & Ling, 2014; Rooke & Amos, 2013).

This led several organizations to embark on preventive media measures by employing several strategies aimed at addressing the prevalent use of e-cigarettes among young people. Some of the strategies include message framing (Fucito et al., 2010; Wong & McMurray, 2002; Latimer et al., 2012; Goodall & Appiah, 2008), fear, humor, and entertainment appeals (Wolburg, 2004; 2006). Another factor that has been shown to effectively influence attitudinal and behavioral change is the source characteristics, more to the point, source credibility (Freed, Clark, Butchart, Singer, & Davis, 2011; Case et al., 2017; Roe & Teisl, 2007). A study by Hovland & Weiss (1951) which is regarded as the earliest in the exploration of source credibility found that highly credible sources were more persuasive, and thus more effective than sources with low credibility. With regards to health messages, studies have also shown that the credibility of the spokespersons in a health message can be persuasive and influential on the attitudes of the receiver in terms of how it influences people's attitudes toward the message and ultimately their intention to avoid health-threatening behavior (Jones, Sinclair & Courneya, 2003). Despite these findings, there is little to no evidence of the impacts of a spokesperson's credibility specific to e-cigarette prevention messages. The limited evidence was alluded to by Case et al., (2017) who also stressed the need to further explore the impacts of source credibility on the efficacy of e-cigarette prevention messages.

While the credibility of the source can impact the persuasiveness of the message, it is usually not entirely by itself. In a meta-analysis of source credibility studies, Pornpitakpan (2004) found that source credibility always interacted with other factors, prominent among them were recipient-based variables, examples of which are the individuals' need for cognition (Haugtvedt, Petty, Cacioppo & Steidley, 1988). Pornpitakpan, (2004) went on to recommend that further studies investigate the many moderating factors that interact with source credibility to

influence attitudes. Consequently, there is a need to advance the knowledge of source credibility beyond its current state to better appreciate its effects while accounting for moderating variables that interact with source credibility to cause these changes in attitudes.

These assumptions about source credibility make logical sense when one examines recent evidence of how the credibility of a source might not solely bring about the expected impact. For instance, the United States Federal Drug Administration extended its Tobacco and Nicotine Regulation campaign called "The Real Cost" to include efforts to address the prevalent use of e-cigarettes among young people in the US (Zeller, 2019). The campaign -organized by a credible source: the FDA- was informed by research that showed the prevalence of e-cigarette use among young people were as a result of their low perceived risk of using e-cigarettes; hence, the goal was to create ads that would help increase the risk perception among young people. The participant's perception of risk has been shown to moderate the effects of source credibility is (Tseng, & Wang, 2016, Cho & Lee, 2006). With this notion in mind, it is reasonable to assume that beyond the credibility of the source, the level of risk perception among young people might have a role in the way they are influenced by such messages.

To comprehensively examine the effects of credible spokespersons in e-cigarette prevention messages while accounting for the intercepting role of perceived risk, the study will rely on the Elaboration Likelihood Model, especially due to its ability to account for the variances of more independent variables and its use by previous scholars who conducted similar studies (Jones, Sinclair & Courneya, 2003; Case et al., 2017). The ELM suggests that people process information through two routes --central and peripheral-- and their attitudes are influenced by the level of elaboration they allot to the message which, in turn, is determined by their degree of motivation and ability to process the message. ELM has been a vital theoretical

framework in evaluating the impacts of source credibility. Petty & Cacioppo (1984) argued that source credibility is effective only in low involvement conditions, while under high involvement conditions, participants paid little to no attention to the credibility of the source when processing the message. However, Jones, Sinclair & Courneya (2003) and Kahle & Homer (1985) asserted the contrary. In their findings, source credibility was impactful both on the high and low involvement conditions. Despite the conflicting findings, little research exists to bring clarity to the role of source credibility within the ELM.

Therefore, the current study aims to bridge this gap in understanding the influence of source factors in an e-cigarette prevention message. More to the point, the study will examine the impacts of the credibility of spokespersons on the attitudes of young adults towards e-cigarettes and their perceived effectiveness of e-cigarette prevention messages while accounting for the moderating role of perceived risk. The primary arguments are (1) an individual's perception of the risk of using e-cigarettes will determine the effects of the credibility of spokespersons on their perceived effectiveness of young adults towards e-cigarettes. (2) the individuals' levels of perceived risk will also be related to their attitudes towards e-cigarettes. The paper begins with a cursory background on e-cigarettes and the theoretical framework, then proceeds to expound on the understanding and impacts of source credibility followed by a rationale for its effects along the two routes within the ELM. Later, the paper goes on to argue for the propriety of perceived risk as a suitable operationalization of motivation within the ELM. Then, it will proceed to the experimentation of the hypothesized relationships.

Chapter 2

Literature Review

E-Cigarettes Background

Electronic cigarettes go by several nomenclatures: Electronic Nicotine Delivery Systems ENDS, e-cig, vape stick, or vape pods (Willet et al., 2019). E-cigarettes come in various shapes. Some take the shape of actual tobacco cigarettes while others take a varied mix of shapes like USB pens, mini tanks (CDC, 2019). They usually contain a mixture of chemicals, with nicotine being the most prominent (Etter, & Eissenberg, 2015). The devices consist of "a battery and heating element that heats a nicotine solution (e-juice) to deliver vaporized nicotine to the user" (Spindel & McEvoy, 2015; pp. 486-487).

There are many contradictions as to the origins of e-cigarettes, but according to the Consumer Advocates for Smoke-Free Alternatives Association CASAA, the first design was patented to Joseph Robinson in 1930 (CASAA, n.d). Later in 1961, a US scrap metal dealer named Herbert Gilbert invented a prototype that would serve as a precursor to the modern e-cigarettes (Smithsonian, 2018). It wasn't until 2003 when a Chinese pharmacist, inventor, and smoker, Hon Lik invented the first commercially viable and available e-cigarettes which were then launched in 2007 (Bell & Keane, 2012). CASAA (n.d) also reported that it entered the US markets in 2007. A year later, the World Health Organization released a statement that declared e-cigarettes as an illegitimate means of smoking cessation (WHO, 2008).

In the US, e-cigarette use among high school students rose by 78% between 2018 and 2019 (CDC, n.d). According to CDC, "In 2018, more than 3.6 million U.S. youth, including 1 in 5 high school students and 1 in 20 middle school students, currently use e-cigarettes" (CDC,

n.d). Things came to a head between August and September 2019 when there were a plethora of

news reports on vaping related illness and deaths with over 200 people on daily admission (CDC,

2019) which led the Federal Drug Administration and CDC to begin an investigation on the issue

(CDC, 2019). Since then, there has been a decline in reported cases (CDC, 2019). While it is

safer for adults who are not pregnant (CDC, 2019), reports have shown that nicotine poses severe

mental health dangers to young people (Surgeon General 2014; 2016).

It is also pertinent to note that there has been a polarization of opinions on the dangers of

e-cigarettes (Bell & Keane, 2012). For those described as "Harm reduction organizations" or

pro-vaping groups and some smokers themselves, e-cigarettes are safer alternatives to tobacco

smoking (Bell & Keane, 2012), whereas, for some others like the Canadian Health Department

and the World Health Organization, e-cigarettes are still classified alongside tobacco cigarettes

in terms of health dangers (Bell & Keane, 2012). Amidst these differences in opinions, one thing

is constant, vaping has been linked to numerous ailments, especially among young people in the

US (CDC, 2019). This makes the examination of media interventions an imperative step in

creating awareness about the product to stem the tide of e-cigarette use among young people.

Therefore, it is important to understand the impacts of having medical experts become

spokespersons in various communication interventions. The assumption is that their credibility

will spill into the message and might affect the efficacy of these messages.

Elaboration Likelihood Model

The Elaboration Likelihood Model is an attempt by John Cacioppo and Richard Petty to

explicate how people process, assimilate, and are persuaded by messages (Schuman, Kotowski,

& Young, 2012). The model is based on the premise that "people are neither universally

thoughtful in evaluating persuasive messages nor universally mindless. Instead, a variety of

individual and situational factors will determine how much cognitive effort a person devotes to processing a message" (Petty & Cacioppo, 1984; p. 668)

ELM proposes a dual process persuasion theory, much like the Systematic and Heuristics model of persuasion by Chaiken, (1980). Common to consumer behavioral studies, ELM is one of those models that serve as a general framework to vividly describe and predict how people will process a persuasive message. The model postulates that the efficacy of persuasive attempts is a function of a person's likelihood to elaborate on a message. Elaboration here implies spending cognitive resources to think critically about the issue-relevant elements of the message. The ELM proposes two routes that lead to attitudinal change: the central and peripheral routes. Levels of elaboration are the prominent indicator of what route is to be taken. Furthermore, the routes are determined by the individual's degree of motivation and ability to process the message (Schuman, Kotowski, & Young, 2012). One is said to have taken the central route when their level of elaboration is high, whereas the peripheral route is characterized by low levels of elaboration (Petty & Cacioppo, 1986). The central route is characterized by a persistence of message (lasting impact) and resistance to change, whereas, the peripheral route is quite the contrary (Schuman, Kotowski, & Young, 2012)

Schuman, Kotowski, & Young (2012) went on to highlight some variables that serve as motivation and ability cues. One that has received scholarly attention is Involvement with the issue or product (Petty, Cacioppo, & Schumann, 1983). One's involvement could stem from their personal interests in the issue, commitments, need for cognition (Morris, Singh, & Woo, 2005; Cacioppo & Petty, 1986). Concerning ability variables, Hafer, Reynolds, & Obertynski (1996) manipulated the complexity of a message. Wells, & Brock (1976) also examined distractions as a moderating variable within the ELM framework, while message repetition was investigated by

Schumann, Petty, & Clemons (1990). These variables are not limited to being categorized under motivation and ability. They can also serve as cues for attitudinal change. Put more succinctly, the central and peripheral routes are also representative of variegated variables.

Multiple variables usually serve as indicators of different routes. For example, argument quality, source credibility, attractiveness, and message framing can serve as cues for both central and peripheral cues (Schuman, Kotowski, & Young, 2012; Umphrey, 2003; Nayakankuppam and Priester, 1998). Flynn et al., (2011) operationalized the argument strength of a smoking prevention message as both central and peripheral cues. Specifically, strong arguments served as indicators for central processing, whereas weak arguments served as indicators for peripheral processing.

Schuman, Kotowski, & Young (2012) highlighted the utility of the ELM in an array of domains, which has to do with constructing persuasive and compelling messages with attitudinal change as a fundamental goal. Some of those domains include public service announcements, health advertising, brand, and organizational advertising among others. Perhaps one of the studies that have laid the foundation for understanding information processing with the ELM is by Petty, Cacioppo, & Schumann, (1983) titled "Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement". The authors investigated the processing of advertising by college students and how involvement moderated that process. They defined involvement as personal relevance. Specifically, the high involvement group was told they would receive the product being advertised, while the low involvement group will have no access to the product in question. The finding provided validation for the model; those in the high involvement group elaborated on the message more than those in the low involvement group.

Another consideration is the age variable, considering that the target audience for e-cigarette prevention messages has been young people as they have made up a majority of at-risk subjects of the dangers associated with the use of e-cigarettes. , Te'eni-Harari, Lampert & Lehman-Wilzig (2007) wondered if truly, young people took two different routes in processing a message. This led them to put that conundrum to test and they found that the elaboration likelihood model does not necessarily apply to younger people. Particularly, both the attractiveness of the source and the message arguments did not significantly differ in the effects on their attitudes towards the ads. This finding raised a suspicion that the two routes of ELM may not apply to all demographics.

ELM and Health Communication: The current study focuses on anti-vaping messages, particularly with focus on young adults. This effort will help in providing vital insights into what elements of a prevention message possess more persuasiveness. However, it is instructive and scholarly appropriate to examine the literature on health-related messages within the ELM framework. While ELM has been around for more than three decades (Schuman, Kotowski, & Young, 2012), it has received scant attention in understanding health-related messages. Little wonder why Petty, Barden & Wheeler, (2009) described ELM as an emerging theoretical framework in health message research. They noted that health behaviors like smoking are largely influenced by one's attitudes, which in turn can be affected by the level of message elaboration. (Petty, Barden & Wheeler, 2009).

ELM has also been combined with other theoretical frameworks to understand and enhance the persuasiveness of health-related messages. For instance, Dinoff & Kowalski (1999) employed the Protection Motivation Theory PMT and the ELM to understand how people processed AIDS prevention messages. They argued that people are more likely to process the

message centrally when their protection motivation is high, whereas, when it is low. They tend to take the peripheral route. Dinoff & Kowalski (1999) found validation for their assumptions and this reemphasizes the theoretical argument of the ELM that people's inclination to seek self-protection might lead them to pay cognitive attention to health information. Another study that combines the ELM with another theoretical framework is by Jones, Sinclair & Courneya (2003). They merged ELM with Prospect theory to investigate the influence of gain versus loss framed messages and source credibility in advocating for physical exercises among students. A point of interest in these two theories which were paired with ELM is their focus on people's self-preservation and their perception of risk. Particularly, the Protection Motivation Theory and Prospect theory share one assumption: people will always act to protect themselves from risk if they feel their life or that of their loved ones are threatened. It also makes sense as to why the ELM aligned suitably with these theoretical frameworks, as the ELM is based on the idea that what people consider to be relevant would impact the way they process information. This then beggars the rhetorical question: what is more relevant than one's health?

Smoking Preventive Messages:

Anti-smoking messages are preventive health messages intended to persuade people from smoking (Reardon & Miller, 2008). The attention on anti-smoking messages increased as the rate of smoking among young adults spiked. According to the Centre for Disease Control (CDC), smoking is one of the "leading causes of disease and death" in America as 10 out of every 100 American adults aged 18-24 are smokers. This has driven the attention of scholars and health officials alike to this phenomenon and how to address it through communication (Reardon & Miller 2008).

There is a vast literature in smoking prevention messages including tobacco and electronic cigarettes across the different theoretical and paradigmatic frameworks (Keller & Lehmann, 2008; Farrelly, Niederdeppe, & Yarsevich, 2003; Flynn et al., 1992). These frameworks ranged from EPPM (Witte, 1992) to the Health Belief Model (Rosenstock, Strecher, & Becker, 1988) among others. However, only a few of these studies are grounded in the ELM. For example, the investigation by Flynn et al, (2011), which sought to explore the potentials of understanding the effects of anti-smoking messages through the Elaboration likelihood Model found that high-risk people were more likely to rely on the arguments of the message, thus, taking the central route than those who are low risk. This lends some credence to the idea that the perception of risk plays a vital role in how young people process a message and how they are ultimately influenced by it.

In the context of e-cigarettes, there isn't enough evidence to demonstrate the effects of anti-vaping messages within ELM. This was alluded to by Case et al., (2018) when they applied constructs from the ELM in studying how the credibility of a source affects the attitudes of youth adults towards e-cigarettes. They found a relationship between the credibility of the source and the participants' attitudes towards e-cigarettes. This study extends that knowledge to understand how other variables interact with source credibility to cause attitudinal changes.

The Credibility of the Spokesperson

The credibility of a source is one of those concepts that has variegated conceptualizations (Hovland & Weiss, 1951; McCroskey & Teven, 1999), however, the most common description was put together by Pornpitakpan, (2004) after a review of 5 decades of evidence. According to Pornpitakpan, (2004), the two common dimensions of source credibility is Expertise and Trustworthiness of that source. Expertise is the "degree that one believes that the source has

knowledge, skills, and thus accurate information directly influences whether audiences think that the source is worth listening to" (Case et al., 2018, p.1060). Trustworthiness on the other hand "refers to the degree to which an audience perceives the assertions made by a communicator to be ones that the speaker considers valid" (Pornpitakpan, 2004, p.244; Hovland, Janis, & Kelley, 1953). There is an abundance of evidence that the credibility of a message source determines the persuasiveness of a message; succinctly put, sources with high credibility have been shown to have more positive and persuasive effects on a message than sources with low credibility (Case et al, 2018; Petty & Cacioppo, 1996; Horai, Naccari, & Fatoullah, 1974).

A source, or in this context, spokesperson is an individual chosen to represent, advocate for, and endorse the product being advertised (Goodman, 1998). In advertising studies, spokespersons are usually made up of celebrities, past employees, and professionals of a certain field (Goodman, 1998). While the use of spokespersons in advertising is rampant and has received a lot of attention from scholars (Misra & Beatty, 1990; Atkin & Block, 1983; DeSarbo & Harshman, 1985), little is known about its impacts on preventive messages like anti-smoking messages. This further enhances the rationale for the current study which aims to examine the effects of the credibility of spokespersons on health communication interventions. Source credibility has demonstrated its influence on health messages and behaviors. For instance, Phua & Tinkam, (2016) investigated how participants perceived the credibility of a spokesperson in a PSA on obesity. They found that participants found that messages with spokespersons deemed credible by participants were more effective than those deemed less credible.

Source Credibility and ELM: According to the ELM, the central and peripheral routes affect attitudes which in turn lead to behavioral change (Schuman, Kotowski, & Young, 2012). Multiple variables can serve as an indication of these routes or cues. (Petty & Cacioppo, 1984). It

is important to reiterate one of the tenets of the Elaboration likelihood which states that a single variable could play contradicting roles within the process. For example, Schuman, Kotowski, & Young, 2012 noted how message arguments can serve as a central cue (argument quality) or a peripheral cue (argument quantity).

Source credibility has also been studied as both a central and a peripheral cue (Dholakia & Sternthal, 1997). However, there is a disparity in terms of the findings. On one end of the spectrum, source credibility is believed to affect only peripheral processing and not central; in other words, messages with source credibility will neither elicit elaboration nor impact the attitudes of those under high motivation. The assumption behind this premise is that people's attitudes are influenced by the credibility of a message source under a low level of involvement or personal relevance, whereas, for highly involved people, the credibility of the source is not a determinant of attitude change instead, their cognitive responses and mental deliberation of the arguments in the message (Petty, Cacioppo & Goldman, 1981). Specifically, they found that sources with high credibility had more influence on people with low personal relevance compared to high personal relevance. This finding was consistent with that of other scholars (e.g. Rhine & Severance, 1970; Tormala, Brinol, & Petty, 2006; Metzler, Weiskotten, & Morgen, 2000; Dholakia & Sternthal, 1997). They found source credibility had more impact along the peripheral route.

On the other end of the spectrum, studies have found source credibility to influence attitudes along both the central and peripheral routes. For instance, Jones, Sinclair & Courneya (2003) operationalized credible sources as the central cue and less credible sources as a peripheral cue in their study of its effects on the attitudes and intentions towards exercise. The rationale behind their assertions was their "belief that participants will not elaborate messages

from the noncredible source but will elaborate messages from the credible source" (Jones, Sinclair & Courneya, 2003, p.183). It was also based on the logic that people will accord more seriousness to the messages with credible sources, especially as there is a congruence between the source and the issue being advocated. This argument mirrors the theoretical underpinnings of the Match-up hypothesis (Kahle and Homer, 1985) and Social Adaptive theory (Kahle 1984; Kahle and Timmer 198). In other words, people will pay more attention and cognitively assess a health message when it comes from a medical expert as there is a congruence between the medical expert and the issue. In this sense, Kahle and Homer (1985) argue that the presence of a credible source can be considered an argument for the message. In the study by Jones, Sinclair & Courneya, (2003), a medical doctor stood as a credible source, while a High School science student was operationalized as a non-credible source. They found that those exposed to credible sources were more likely to elaborate on the message and the sources had more impact on attitudes, intentions, and behaviors of people towards exercising than non-credible sources.

The findings of Jones, Sinclair & Courneya, (2003) is remarkable considering that the majority of the studies that examined source credibility within the ELM mostly referred to it strictly as a peripheral cue, and their logic behind that operationalization is based on available evidence. The current study aligns with the conclusions of Jones, Sinclair & Courneya, (2003) – because it is health-based and is underlined by the premises of Kahle & Homer (1985) that the congruence between the communicator and the message might lead an individual to process the message. Consequently, it makes sense to conclude that the effects of source credibility on e-cigarette prevention messages might constantly vary as the moderating variables change.

Source Credibility and Anti-smoking/vaping Messages: Within the walls of anti-smoking studies, the credibility of the source plays a vital role in enhancing the effectiveness of

the message and can determine the success of the campaign (Pornpitakpan, 2004; Sternthal, Phillips & Dholakia, 1978). For example, Schmidt (2016) sought to understand how the credibility of a source encourages attitudinal and behavioral change. The study supports the assertion that source credibility affects the way people process the message; highly credible sources are likely to be more persuasive than sources with low credibility. Interestingly, Sternthal, Phillips & Dholakia (1978) discovered an interaction effect; source credibility is usually intercepted or enhanced by other variables. These variables range from the timing of the message, the perceptions of the receivers, and their smoking status (Zagona & Harter, 1966; Rutten, Augustson, Doran, Moser, & Hesse, 2009; Guttman & Peleg, 2003)

With regards to e-cigarettes, the only study, --to the best knowledge of the investigator-- which investigated source credibility is Case et al (2018). They also alluded to this fact, saying "to date, no research has yet examined the role of source credibility and attitudes or beliefs regarding e-cigarette use" (Case et al., 2018. p.1061). They examined the effects of source credibility on people's use of e-cigarettes and the findings validate the positive effects of credible sources and found that people's trust in sources was punctuated by their smoking status and perception of e-cigarette harm. This also lends credence to the assumption that perceived risk should moderate the effects of the spokesperson's credibility.

While many of these studies provide validation for the effects of credible sources, they are not without limitations. For instance, one could assume the reason for the conflicting findings is due to the disparities in operationalization. Case in point, Jones, Sinclair & Courneya, (2003) focused on sources with only one dimension of source credibility: expertise, and thus, not accounting for trustworthiness. Case et al (2018) also focused only on the trustworthiness of the sources. Therefore, the current study draws on the same rationale "that participants will elaborate

on messages with a credible source more than a non-credible source" (Jones, Sinclair & Courneya, 2003, p.183). It then takes it a bit further to investigate the spokespersons with the dimensions of the source credibility: expertise and trustworthiness.

The Moderating Role of Perceived Risk

Although risk perception has been contextualized in several ways across multiple disciplines, what they all agree on is that risk perception is a judgment or assessment of risk associated with a situation by an individual. Nonetheless, the current study will rely on the definition by Pavlou & Gefen, (2004) who defined Perceived risk as "the subjective belief that there is some probability of suffering a loss in pursuit of a desired outcome" (p. 41). This proposition mirrors similar constructs by other researchers on the issue of perceived risk. For example, the Health Belief model developed by Rosenstock and his colleagues in the 1950s proposed perceived risk and included four other constructs to understand people's perceptions about health-related issues (Hochbaum, Rosenstock & Kegels, 1950). Other frameworks that employed similar constructs are the Extended Parallel Process by Witte (1992), and Protection Motivation Theory by Rogers (1975). Moreover, McCoy et al., (1992), while outlining some popular theories and models that have been used to study preventive health messages, argued that they all have one variable in common: risk perception. They also postulated that risk perception is a vital variable that is "associated with an increased likelihood that the risky behavior will be stopped" (McCoy et al., 1992, p. 470)

Risk perception becomes useful in providing insights into the information processing behaviors of individuals (Ferrer & Klein 2015). According to Slovic & Peters, (2006), when humans are confronted with a situation perceived as risky, they tend to make judgments based on their rational thinking or feelings. In the same treatise of risk perception, Slovic & Peters (2006)

argued that the subjective form of risk perception is based on an individual's intuition, personal experiences, and hasty judgments about the gains and losses when confronted with a threatening situation.

Concerning how peoples' processing of messages affect their attitudes and by extension, behavior, Rothman & Salovey (1997) in their disquisition titled "Shaping Perceptions to Motivate Healthy Behavior: The Role of Message Framing" argued that an individual's subjective perception of risk influences how they perceive a message. Specifically, they make judgments, not on the rational import of a message but their perception about the risk involved in an action being advocated by the message. For instance, if a message reads "If you don't stop vaping you will end up with a lung disease", Rothman & Salovey (1997) suggested that an individual's assessment of the risk involved with smoking will determine the impact of the message. Specifically, if they perceive smoking as a risk activity, they are likely to be impacted more than when they don't.

Studies have also linked risk perception and a direct effect on behaviors like e-cigarette use. Brady et al., (2013) found through a longitudinal study that lower perception of risk led to increased use of e-cigarettes among young adults. This pr. Moreover, Dinof & Kowalski (1999) alluded to this fact when they argued that young adults will not be deterred from taking health-threatening actions like unprotected sex merely because it is dangerous, instead, their attitudes and behaviors will be dependent on their perception of their severity and vulnerability to the infection. In other words, albeit the action is dangerous, a better predictor of a change in attitude and behavior would be their overall perception of risk (Dinof & Kowalski, 1999; Kline & Strickler, 1993). This line of reasoning mirrors the function of motivation as an indication of personal relevance within the ELM (Petty & Cacioppo, 1984). In simple terms, people's lives are

relevant to them, and when they perceive a threat to it, they are motivated to take precautions and adhere to the information that enhances self-perseveration. This is because their lives and that of their loved ones are personally relevant to them.

There is evidence outside health communications that valorizes the operationalization of perceived risk as a motivational variable and its relationship with source credibility (Tseng, & Wang, 2016, Cho & Lee, 2006). These studies found perceived risk to play a moderating role in determining the effects that sources have on the individual. Particularly, Tseng, & Wang, (2016) found that individuals with high perceived risk were more likely to allot more cognitive efforts on the message, thus, taking the central route than those with a low level of perceived risk. The findings of Cho & Lee, (2006) were also consistent with the moderating role of perceived risk on the effects of source credibility. These findings were based on the assumption that high perceived-risk individuals "tend to seek information from sources that seem most likely to satisfy the particular information needs" (Tseng, & Wang, 2016, p.2291), and are motivated to search extensively for information concerning the subject matter (Cho & Lee, 2006; Flanagin et al., 2014; Dowling & Staelin, 1994). It becomes entirely within reason to assume that perceived risk qualifies as a motivational construct in the ELM. Hence, the current study argues that perceived risk is going to dictate how young people are going to respond to the e-cigarette preventive message by playing a mediating role in the way they process a message, and invariably, influencing their attitudes towards e-cigarettes.

Perceived Effectiveness

Perceived effectiveness is usually operationalized as the function of the attitude of a people towards a message and their perceptions of the message's persuasiveness, likability, and credibility (Davis et al, 2016; Dillard & Peck, 2000; Dillard, Weber, & Vail, 2007b; Murphy-

Hoefer, Hyland, & Higbee, 2008) There is no gainsaying that the objective of an electronic cigarette prevention advertisement -which can also be referred to as a cessation ad- is to persuade its audience into quitting the product (Davis et al., 2013). Studies have proven that a veridical means of assessing this objective is to determine the perceived effectiveness of the message (Davis et al., 2013). Perceived effectiveness is grounded in attitudinal change research and its interaction with the perceptions and behavior of the individual (Davis et al., 2013). Simply put, one's perception of the effectiveness of an ad has been shown to precede the actual effectiveness of the ad (Dillard, Shen, & Vail, 2007; Dillard, Weber, & Vail, 2007; Davis, Uhrig, et al., 2011). To further validate this assertion, Davis et al., (2013) conducted a longitudinal study of smokers in the US to determine if people's perception of the ad effectiveness correlates with actual outcome expectations like attitudes and behaviors. Their finding revealed that PE is a "powerful predictor of likely ad success" (Davis et al., 2013, p.462).

PE has received some criticism from scholars who argued there was insufficient evidence to prove its prediction of actual effectiveness. For instance, O'keefe (1993) argued there is a lack of correspondence between perceived and actual effectiveness, in other words, the perception that a message is effective might not convincingly suggest the message is effective. This led Dillard, Weber & Veil, (2007) to conduct a meta-analysis of studies that evaluated the relationships between perceived effectiveness and actual effectiveness. They found among other things, 95% of these studies – with topics ranging from health to political behavior-- found a positive relationship between both variables.

Perceived effectiveness has been investigated with regards to e-cigarette prevention messages and the findings are consistent with that of Dillard, Weber & Veil, (2007) which found the perceived effectiveness correlates with the actual effectiveness of the message. For instance,

Noar et al., (2020) sought to verify the connection between young adults' perceived message effectiveness of e-cigarette prevention messages and the actual message effectiveness. They found that the perception of the effectiveness of the message by the said population was mirrored by the actual impact of the ads. This implies that perceived effectiveness serves as a reliable tool for testing the efficacy of an e-cigarette message, hence suitable as an outcome measure for the current study. Perhaps these findings also provide compelling support for the postulations of other scholars like Fishbein et al., (2002) that PE should be a prerequisite for evaluating the success of health-related Public service announcements.

Summary

From the corpus, three research gaps were discovered, first, a general dearth of evidence on e-cigarette prevention messages, secondly, the limited understanding of the impacts of source factors, more to the point, the spokesperson's credibility and their effects on the processing of e-cigarette prevention messages. Finally, the moderating role of perceived risk as a motivational construct within the Elaboration Likelihood Model with regards to health-related media interventions. Based on the stated evidence, we expect an interaction between perceived risk and credibility of a spokesperson such that high perceived risk/high credible spokesperson will lead subjects to perceive the ad as effective. We also expect the subjects' attitudes towards e-cigarettes to negatively vary by subjects' levels of perceived risk.

Hypotheses

The current study hypothesizes the following effects on the perceived effectiveness of the message and attitudes towards e-cigarettes.

H1 Participants will elaborate more on messages with high credible spokespersons than low credible spokespersons

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H2 The perceived effectiveness of the message will be influenced by the interaction between the spokesperson's credibility and perceived risk.

H3 As perceived risk increases, participants' attitudes towards e-cigarette will decrease (i.e., more negative)

Chapter 3

Methodology

This study will align itself with the previous research on ELM by employing an experimental design (Christine, 2002; Haugtvedt, Petty, Cacioppo & Steidley, 1988). Experiments are quantitative methods whereby "researchers manipulate the independent variable and then observe the responses of subjects on the dependent variable" (Wimmer & Dominick 2013. p. 248). Specifically, the study employed an online experimental method using Qualtrics, an online survey panel. With the advent of the internet, many social science researchers have increasingly embraced this mediated method because of some of the merits it affords research. Wimmer & Dominick (2013) outlined some of the benefits to include cost-effectiveness, larger sampling, and subject's participation at their convenience. In the current study, a 2 (Source credibility) X 2 (perceived risk) factorial design will be employed to ascertain the influence of the independent variables on the dependent variables (elaboration, perceived effectiveness, and e-cigarettes attitudes). Approval for the study was obtained via the university's IRB before data collection. Afterward, data was curated, streamlined, and analyzed using SPSS.

Participants

Participants will be students recruited from the University of South Florida through a convenience sampling. The total number of participants who responded was 323. Data screening was conducted to filter cases within the data that could pose potential problems for the analysis (Oliver et al., 2012). Qualtrics provides the beneficial feature of recording the percentage of completion for each case. Cases that were not fully completed were taken out of the data.

Another important feature was the number of minutes participants spent on the entire questionnaire. The average time participants spent on the survey was 6 minutes 9 seconds. Participants who spent less than one minute were assumed to have hastily responded to the questionnaire items, and therefore did not religiously answer the questions. After the data were screened, a total of 313 participants remained for final analysis.

Procedure

The experiment was conducted via Qualtrics, a survey software tool. The Institutional Review Board at the University of South Florida approved the study and the identities of participants are entirely anonymous. Participants were first required to thoroughly read the consent form and an opportunity to select the options of consenting to participate or not. if they choose not to participate, they will not get access to the survey. However, if they consent to participate, the survey will begin and they will be asked to report their demographic information (age, gender, level of education, and smoking status). Then, they went on to report their level of perceived risk via four questions. The experiment consisted of two anti-vaping ads stimuli which serve as the two main conditions. Using a 50/50 randomization, the participants were randomly and evenly assigned to one of the two conditions (i.e. exposed to one of the ads stimuli). After seeing the ad, they were asked to answer a set of questions measuring their elaboration, they were also asked to rate the credibility of the spokespersons, their impressions of the messages, and their e-cigarette attitudes. After they have completed the self-reported measures, they will be exited from the survey.

Stimuli Materials

The stimuli materials will include two anti-vaping ads. The first is part of an e-cigarette use prevention campaign by the Office of the Surgeon General called "Know Your Risks". The

campaign was launched in 2016 and it featured the former Surgeon General, Vivek Murthy MD. The second material came from the FDA's "Real Cost" Campaign which launched in 2014 with an initial focus on combustible cigarettes, but in 2019, was expanded to include e-cigarettes (FDA, 2020). The PSA featured a popular social media magician, Julius Bein. These ads were selected because their conceptions were predicated on the objective of elevating risk awareness of e-cigarettes.

Measures

Credibility of spokesperson: Based on similar studies by Jones, Sinclair & Courneya (2003), the credibility of the spokesperson will be based on the stimuli materials. The ad that featured the surgeon general served as the high credible spokesperson while the ad with Julius Dein the young magician will serve as a low-credible spokesperson. Manipulation checks were conducted to ensure participants in the respective condition perceived their credibility accordingly.

Perceived Risk: The measure for perceived risk will be based upon the Risk Perception framework by Rimal & Real (2003) which operationalized perceived risk as the product of perceived susceptibility and severity. Rimal & Real (2003). They conceptualized perceived risk as the product of perceived susceptibility and severity. Perceived Susceptibility was defined as "an individual's constitutional vulnerability to a hazard" (Brewer et al, 2007, p.137), while Perceived Severity refers to the perception of "the extent of harm a hazard would cause" (Brewer et al., 2007, p.137). Perceived susceptibility will ask questions like " (a) compared to others, I understand my risk of getting lung illness from using e-cigarettes is … (b) the likelihood of my getting lung illness from using an e-cigarette is … Responses ranged from (1) not likely to (7) extremely likely. Severity will be measured by asking "E-cigarette use can kill … and E-

cigarette use is a deadly behavior. These items were combined to create a composite variable

with a Cronbach's Alpha (α = .78) so that higher scores indicate high perceived risk (Rimal &

Real, 2003)

Dependent Variables

Elaboration: The study relied on Reynold's (1997) message elaboration scale to assess

elaboration. The scale involved a 5-point Likert scale with 1= strongly disagree and 5 = strongly

agree. Some of the questions include "While reading the message I was attempting to analyze the

issues in the message" and "While reading the message I was extending a good deal of cognitive

effort". Items that measured less elaboration were reversed coded. These items were then

combined to create a composite variable (α = .85)

E-Cigarette Attitudes: To assess attitudes, the study relied on e-cigarettes attitudes by

Duke et al, (2016). A 7-point semantic differential scale was used with the following adjectives:

unenjoyable/enjoyable, unhealthy/healthy, dangerous/safe, boring/fun, stupid/smart, not

cool/cool, and not attractive/attractive. The question started with "using e-cigarettes is…"

"Responses to the items were averaged to create a scale ranging from 1 to 7 (Duke et al, 2016).

The scale was coded and scored in such a way that a high score indicates a negative attitude and

a lower score indicates positive attitudes toward e-cigarettes. (α = .93)

Perceived effectiveness of the ad: Perceived effectiveness has been shown to be a decent

predictor of intentions and behaviors towards health messages, particularly smoking cessation

messages (Davis et al., 2011; 2013; 2016). Adapting the scale used by Davis et al, (2017)

respondents will be asked to respond to statements like "the ad was worth remembering", "the ad

grabbed my attention, the ad was informative, convincing and meaningful". The responses were

measured on a 5-point Likert scale ranging from strongly disagree to strongly agree. Afterward,

the items were combined to create a composite variable ($\alpha = .89$)

Chapter 4

Results

Manipulation Check

An independent sample T-test was conducted to verify the source credibility manipulation in both ads using the sample data. The medical spokesperson was manipulated as a credible source, while the non-medical spokesperson served as the non-credible source. Relying on the source credibility scale by Jones, Sinclair & Courteyna (2003), participants were asked on a 7-point Likert scale (Strongly Agree, Strongly Disagree) their agreement that the spokesperson was trustworthy, trained, good, experienced. Levene's test for equality of variance was not significant [$f(32) = 2.94$, $p > 0.05$], so we can assume equal variance. Significant differences were found between both groups [$t(32) = 3.21$, $p < 0.05$] The medical expert ($M = 3.76$, SD=1.59, n= 17) was perceived as more credible than the non-medical expert (M= 2.25, SD= 1.09, n=17). Thus, the source credibility manipulation was successful and effective for creating the intended conditions.

Demographics

A review of the sample demographics is shown in Table. It revealed 70% of the participants were females, 29.7% were males, and one person identified as Others. Participants who were between 18 to 21 made up 79.6% of the sample. Those within the range of 22-26 made up 52%, and 12% included those within the ages of 27-34. In terms of educational qualification, those with some college but no degree or associate degree made up 76% of the sample. Participants with a High school degree or equivalent were 18.8%. Those with bachelor's degrees, 4.8% with just one participant with a Graduate degree. The smoking status of participants

revealed that 47.6% has never used e-cigarettes, whereas 49.8% said they have tried it and 8
participants were unsure.

Hypothesis 1

To test the first hypothesis which predicts that participants in the credible source
condition will elaborate more on the message than those in the non-credible source condition, an
independent sample T-test was conducted. Levene's test for equality of variance was not
significant [$f(311) = 0.59$, $p > 0.05$], so we can assume equal variance. The results revealed no
significant differences in elaboration between the high credible spokesperson (M = 3.82, SD=
.57, n=158). and the low credible spokesperson (M = 3.80, SD= .58, n=155), [t (311) = -.336, p
>0.05]. Hypothesis 1 was not supported.

Hypothesis 2

The second hypothesis predicted an interaction effect between spokesperson credibility
and participants' levels of perceived risk on their perceived effectiveness of the ad. A
hierarchical regression analysis was conducted to also control for smoking status and gender. An
interaction variable which entailed the product of perceived risk and spokesperson credibility
was created to assess the interaction effect. The control variables were added in the first block,
the second block was made up of the two main predictor variables. A third block included the
interaction variable. Perceived effectiveness (dependent variable) was then regressed on all
independent variables (perceived risk, spokesperson credibility, and interaction variable).
Preliminary analysis of control variables (Smoking status & gender) revealed no effects on the
model. The model revealed that smoking status & gender explained less than 1% variance on the
dependent variable ($\beta = .049$, $\beta = .037$ respectively) Therefore, they were sequestered from the
model to allow for the main analysis.

For the final analysis, the perceived ad effectiveness was regressed on Perceived risk and spokesperson's credibility making the first block with the second block consisting of the interaction variable (a product of Perceived risk & Spokesperson Credibility). The overall model was significant $[f(3, 309) = 9.79, p<0.05, R^2=.087]$. It explained only 9% of the variance on the perceived effectiveness of the message. Therefore, Hypothesis two was not supported as it predicted an interactive effect of the independent variables on the criterion variable. However, Table 1 shows perceived risk proved to be the strongest predictor of perceived ad effectiveness ($\beta=.277, p< 001$).

Table 1. Hierarchical Regression analysis of perceived risk and the spokesperson's credibility on perceived ad effectiveness.

Variables	B	SE B	β	p
Perceived Risk	.289	.081	.277**	.000
Spokesperson Credibility	-.424	1.311	-.177	.747
Perceived Risk x Spokesperson Credibility	.034	.113	.162	.767

*p < .05; **p ≤ .001

Dependent Variable: Perceived Ad Effectiveness

Hypothesis 3

A linear regression analysis was conducted to test Hypothesis three which predicted a negative relationship between perceived risk and attitudes towards e-cigarettes use. Attitudes towards e-cigarette use (dependent variable) was regressed on perceived risk (independent variable). Results, shown in Table 2. revealed a significant effect on attitudes towards e-

cigarettes $F(1, 314) = 58.66$, p< 0.001. With perceived risk accounting for 15.5% of the variance

on the attitudes towards e-cigarette use. Hypothesis 3 was supported.

Table 2. Linear Regression analysis of perceived risk on attitudes towards e-cigarettes.

Variable	B	SE B	β	p
Perceived Risk	-.473	.062	-.397*	.001

*p < .05; **p ≤ .001

Dependent *Variable: Attitudes Towards E-cigarettes*

Chapter 5

Discussion

The current study aimed to evaluate the impacts of credible spokespersons in electronic cigarette prevention messages. The study also attempted to establish the role Perceived risk plays within that ELM as it has been found to play similar roles as Involvement and Need for cognition in terms of motivating people to process the message (Tseng, & Wang, 2016, Cho & Lee, 2006). The findings give insights into the influences of these variables on the perceived effectiveness of e-cigarette prevention messages and people's attitudes towards e-cigarettes.

The prominent finding of the study is the essential role that perceived risk plays in influencing people's attitudes towards e-cigarette prevention messages. One of the hypotheses predicted variance in e-cigarette attitudes as a function of perceived risk; specifically, as perceived risk increases, the attitudes towards e-cigarettes will decrease. The findings reveal that those with higher perceived risk had a negative attitude towards e-cigarettes use than those with low perceived risk. The finding was expected and further establishes perceived risk as a veritable indicator and predictor of effective e-cigarette prevention messages (Dinof & Kowalski, 1999; Kline & Strickler, 1993). In other words, getting people to perceive e-cigarette as risky and dangerous behavior is an important objective to consider when designing an e-cigarette intervention message.

The finding also reiterates previous conclusions that highlight the pertinence of perceived risk. For example, Brady, Morell, Song, Halpern & Felsher (year) found that increased attitudes towards e-cigarette use was associated with lower perceived risk (Chaffe et al., 2015). Across health communication, perceived risk has played a significant role in how people perceive, react

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to, and process a message. For example, some of the prominent health preventive communication theoretical frameworks --the Health Belief Model by (Hochbaum, Rosenstock & Kegels, 1950), Prospect theory (Kahmen &Tversky, 198) and Protective Motivation Theory (Rogers, 1975) all share one thing in common: the receiver's perception of risk determines how they react to and process the communication intervention.

Although there was no interaction between the impacts of the spokesperson's credibility and the perceived risk of participants on their perceived effectiveness of the message as anticipated, a better predictor of perceived message effectiveness was mainly the participants' risk perception of e-cigarettes. Importantly, these findings indicate that risk perception is a better indicator of the impact of these message, which aligns with previous conclusions about risk perception by Brady, Morell, Song, Halpern & Felsher (2013), who invariably informed the FDA's Real Cost campaign that aimed to increase people's risk perception of e-cigarettes as a harmful and dangerous substance. One reason the spokesperson's credibility did not show much impact could be because participants paid attention to the theme and argument of the message as well. This line of thinking mirrors that of Petty, Cacioppo & Goldman (1981) which noted that the argument of the message and participants' level of involvement precedes the impacts of source credibility.

The study revealed that credible spokespersons in our message did not lead to more elaboration. This finding supports the original assumptions of the ELM that the source credibility elicits next to no elaboration (Petty & Cacioppo, 1986). This conclusion also enjoys a support from other scholars (Rhine & Severance, 1970; Tormala, Brinol, & Petty, 2006; Metzler, Weiskotten, & Morgen, 2000; Dholakia & Sternthal, 1997). It also runs contrary to that of Jones

et al. (2003), who suggested that health messages from credible sources will be elaborated on more than less credible sources.

One explanation for this finding is that young people, who made up most of the sample, are increasingly disinterested in ads and thus, do not elaborate on these messages. This was concluded in the findings of Te'eni-Harari, Lampert & Lehman-Wilzig (2007), who found no differences in young people's levels of elaboration between both high and low involvement and the nature of the character they were exposed to (Famous v. Non-famous). Hence, it aligns with the postulations of Kitchen et al. (2014) that the assumptions of the ELM might not apply to younger people with access to a technologically interactive environment because ads are becoming more precise and targeted to only those who might have indicated their interest or shown motivation to seek information about the item in question.

The measurement of elaboration could also have been a reason for the disparity in the findings. Kitchen et al (2014) criticized the various measures of elaboration, suggesting that the two forms of measuring elaboration -- a self-report of elaboration and though-listing technique-- might not provide sufficient insights regarding the actual elaboration of messages, since people might be too biased to accurately evaluate their levels of elaboration. Instead, they called for "new methodologies and technologies such as metacognition and neuroscience" (Kitchen et al., 2014, p. 2044). Some studies have employed physiological measures to examine the relationships of variables within the ELM framework. Sanbonmatsu & Kardes (1988) investigated the role of arousal on the impacts of the quality of message argument and celebrity endorser. Using the systolic blood pressure method to measure physical exertion as an operationalization of physical arousal, they found that celebrity endorser (peripheral cue) has more impacts under high arousal than argument quality.

Practical/Theoretical Contributions

The main theoretical objectives of the study were to establish the role of perceived risk as a motivational variable within the ELM. This stemmed from the fact that motivation as defined by Petty & Cacioppo (1986) shares a similar construct as perceived risk: issue relevancy. Put more specifically, people become involved and are motivated to process the message in question when the issue affects them significantly (Tseng, & Wang, 2016, Cho & Lee, 2006). The study then relied on the logic that people's motivation will be a function of the levels of their perceived risk. We found a significant impact of risk perception on perceived effectiveness, suggesting that perceived risk could be a viable motivation variable to consider within the framework of ELM. This also technically validates the findings of Tseng, & Wang (2016) and Cho & Lee (2006) which argues that high perceived risk individuals are likely to seek out information regarding a subject matter.

The study also aimed at testing one of the tenets of the ELM, which proposes that variables play multiple roles within the framework, specifically, one variable could serve as indicators of both central and peripheral routes (i.e. will elicit more elaboration on the central route than on the peripheral route depending on the individual's level of involvement). There has also been a debate regarding the role of source credibility in both central and peripheral routes. Petty & Cacioppo (1980) argue that source credibility is a peripheral cue, as people who are less involved in the message will rely merely on the credibility of the source to decide on their reaction to the message. They also suggest a credible source can serve as a product relevant argument, thus, causing people to pay attention to and elaborate on the message. These findings found no differences between both high and low credible spokespersons in terms of elaboration and impact on perceived effectiveness. Further analysis revealed that under high perceived risk,

credible spokespersons did not significantly differ from less credible spokespersons. The finding

suggests that source credibility might not be a variable of interest along the central route as also

discovered by Jones, Sinclair & Courneya (2003).

The study holds some important implications for anti-smoking and health

communications campaigns in general. First is that use of credible spokespersons should not take

precedence when designing an anti-vaping message, instead, the quality of the message

arguments. Previous studies have found that young people are averse to anti-smoking messages

with established authority spokespersons like government officials, medical doctors (Case et al,

2018). Instead they are likely to be influenced by health messaging that reflects their self-image.

Evans et al., (2002) noted that "youth will adopt self-images that are consistent with their values

and will act on those adopted self-images, seeking consistency between them and desired social

images" (p.27). It also makes logical sense because one of the spokespersons in the

FDA's "Real Cost" material is a young social media personality who resonates with young

people, hence, the reason the study found no difference in the way participants assessed their

credibility compared to the ads with a health expert. Therefore, anti-smoking/ health campaigns

should aim to advance the quality of message arguments and employ the services of

spokespersons that evoke admiration instead of authority among young people.

The study also emphasizes the pertinence of elevating the audience levels of perceived

risk as an objective of both e-cigarettes and tobacco prevention campaigns. This sentiment

aligned neatly with those of Brady et al (2013) which found perceived risk to be an important

indicator of reduced affinity towards e-cigarettes. The finding of Brady and his colleagues also

partly informed the Federal Drug Administration to begin a media campaign targeted at

increasing the perceived risk of using e-cigarettes among young people (Zeller, 2019). The

campaign titled "Real Cost" aimed to elevate the level of e-cigarette risk among young people. Finally, the study holds important implications for health communications in general. Currently there has been issues regarding communication strategies employed to enhance COVID-19 prevention and vaccine acceptance. Yıldırım et al., (2021) found that people with high levels of perceived risk are likely to take preventative measures against the virus. Therefore, aside the ads themselves, increasing perceived risk should continuously be an objective of health communication campaigns.

Limitations/ Future Research

As with all studies, the current study was not without limitations. Firstly, most of the measures were self-reported, hence, there's every likelihood measurement problem like social desirability bias, and acquiescence may have impacted the responses of the participants. Wrench et al., (2008) defined social desirability bias as a response provided by participants that conforms with what they consider socially acceptable. Acquiescence on the hand refers to the provision of responses the participant believes the researcher is looking for Wrench et al., (2008). These are common measurement problems that tend to stem from self-reported measures.

Another prominent limitation of the study is not ensuring consistency between the intervention materials, thus, not accounting for two confounding variables: message argument and prior exposure to the materials. Although the stimuli materials captured the spokespersons' credibility accurately, the message arguments in both messages were substantially different, and thus, may have impacted how participants evaluated the messages, and ultimately the results of the study. The possibility of a participant's prior exposure to stimuli materials may also have impacted the findings of this study. Retell, Becker & Remington (2016) found that stimuli materials that are familiar to the participants elicited a different result than those they were not

familiar with. The stimuli materials have been on the internet for a significant period, so participants may have seen the ads before the study, and thus, may have formed an attitude towards the ad or may not see the need to elaborate on it. Future studies should replicate the study while controlling for these confounding variables to ensure clarity with the findings and impacts of spokesperson credibility.

The study attempted to investigate one dimension of the ELM which suggests that one variable could play several roles (Jones et al., 2003). Other prominent and yet dubitable aspects of the model are still underexplored with regards to health communication messaging. Case in point, the elaboration continuum. Further studies should also comprehensively investigate the model with all its concepts and their relationships. The measure of elaboration should also be further investigated to discover which type of measurement is more appropriate. Both the thought-listing of cognitive responses (Petty & Cacioppo, 2012) and the elaboration measure by Reynolds (1997) have seemed to result in disparate findings. Perhaps, an investigation of both measures will be beneficial to discover which is more appropriate.

Perceived effectiveness is one outcome variable that has not received enough attention in relation to e-cigarettes prevention messages. The current study found it to be a veritable outcome when investigating message effects. Perhaps, further studies should expand on its impacts to better understand its nuances with health communication messaging. Furthermore, the current study relied solely on perceived effectiveness without exploring attitudes towards the message. Although the literature on perceived ad effectiveness signals a substantial correlation with message evaluations (beliefs, attitudes towards the message), studies should investigate this correlation with regards to anti-smoking ad message.

Finally, the study supported the assertion that perceived risk is a viable construct of motivation. However, little is known about the correlation between some of the common motivational constructs employed in various ELM studies (involvement, need for cognition), and perceived risk. Future studies should explore these relationships to discover which is a better operationalization of motivation within the Elaboration Likelihood Model.

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Appendices

Appendix A: IRB Approval

UNIVERSITY of SOUTH FLORIDA

EXEMPT DETERMINATION

July 13, 2020

Emmanuel Maduneme
13023 Firth CT
Tampa, FL 33612

Dear Emmanuel Maduneme:

On 7/12/2020, the IRB reviewed and approved the following protocol:

Application Type:	Initial Study
IRB ID:	STUDY001192
Review Type:	Exempt 2
Title:	Credibility of spokespersons and e-cigarette prevention messages: elaboration likelihood model and the moderating role of perceived risk
Funding:	None
Protocol:	• Study Protocol

The IRB determined that this protocol meets the criteria for exemption from IRB review.

In conducting this protocol, you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Please note, as per USF policy, once the exempt determination is made, the application is closed in BullsIRB. This does not limit your ability to conduct the research. Any proposed or anticipated change to the study design that was previously declared exempt from IRB oversight must be submitted to the IRB as a new study prior to initiation of the change. However, administrative changes, including changes in research personnel, do not warrant a modification or new application.

Ongoing IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about

whether these activities impact the exempt determination, please submit a new request to the IRB for a determination.

Sincerely,

Shanitra Butler
IRB Research Compliance Administrator

Institutional Review Boards / Research Integrity & Compliance
FWA No. 00001669
University of South Florida / 3702 Spectrum Blvd., Suite 165 / Tampa, FL 33612 / 813-974-5638

Appendix B: Questionnaire

Introduction

Hello, thank you for participating in this survey. The aim is to determine the effects of the credibility of spokespersons in the PSA you will watch. This will help in improving the quality and persuasiveness of e-cigarette prevention PSAs. Please endeavor to watch the entire PSA and respond to all the prompts as genuinely as you can.

Perceived Risk

Please click on the circle that best describes your impression of e-cigarettes. The closer to any of the word pairs, the stronger your affirmation.

PR 2 I think that the risk of getting sick from using e-cigarettes is

	1	2	3	4	5	6	7	
Extremely Low	○	○	○	○	○	○	○	Extremely High

PR 3 Were I to use e-cigarette, the likelihood of me getting sick from using e-cigarettes is

	1	2	3	4	5	6	7	
Extremely Low	○	○	○	○	○	○	○	Extremely High

PR 4 E-cigarettes are harmful items that can kill

○ Strongly Disagree

○ Somewhat Disagree

○ Disagree

○ Neutral

○ Agree

○ Somewhat Agree

○ Strongly Agree

PR 5 E-cigarettes are more deadly than most people realize

○ Strongly Disagree

○ Somewhat Disagree

○ Disagree

○ Neutral

○ Agree

○ Somewhat Agree

○ Strongly Agree

○ **Start of Block: CREDIBILITY OF SPOKESPERSON**

○ Please indicate your impression of the credibility of the spokesperson in the PSA by clicking on the appropriate number between the pairs of adjectives below.

	Strongly Agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
In my opinion, the spokespersons in the ad are trained enough to talk about the effects of e-cigarettes.	○	○	○	○	○	○	○
The spokespersons in the ad are trustworthy enough to talk about the effects of e-cigarettes.	○	○	○	○	○	○	○
The spokespersons in the ad are good enough to talk about the effects of e-cigarettes.	○	○	○	○	○	○	○
The spokespersons in the ad are expert enough to talk about the effects of e-cigarettes.	○	○	○	○	○	○	○
The spokespersons in the ad are experienced enough to talk about the	○	○	○	○	○	○	○

effects of e-
cigarettes.

Message Elaboration

44 While reading the message I was ...

	Strongly Agree	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree	Strongly Disagree
Attempting to analyze the issues in the message	○	○	○	○	○	○	○
Not very attentive to the ideas	○	○	○	○	○	○	○
Deep in thought about the message	○	○	○	○	○	○	○
Unconcerned with the ideas	○	○	○	○	○	○	○
Extending a good deal of cognitive effort	○	○	○	○	○	○	○
Distracted by other thoughts not related to the message	○	○	○	○	○	○	○
Not really exerting your mind	○	○	○	○	○	○	○
Doing your best to think about what was written	○	○	○	○	○	○	○

Reflecting on the implications of the arguments	○	○	○	○	○	○	○
Resting your mind	○	○	○	○	○	○	○
Searching your mind in response to the ideas	○	○	○	○	○	○	○
Taking it easy.	○	○	○	○	○	○	○

Start of Block: Perceived Effectiveness

PE 1 The ad with this spokesperson was worth remembering

○ Strongly Disagree

○ Somewhat Disagree

○ Disagree

○ Neutral

○ Agree

○ Somewhat Agree

○ Strongly Agree

PE 2 The ad with this spokesperson grabbed my attention,

○ Strongly Disagree

○ Somewhat Disagree

○ Disagree

○ Neutral

○ Agree

○ Somewhat Agree

○ Strongly Agree

PE 3 The ad with this spokesperson was convincing

○ Strongly Disagree

○ Somewhat Disagree

○ Disagree

○ Neutral

○ Agree

○ Somewhat Agree

○ Strongly Agree

PE 4 The ad with this spokesperson was powerful

○ Strongly Disagree

○ Somewhat Disagree

○ Disagree

○ Neutral

○ Agree

○ Somewhat Agree

○ Strongly Agree

PE 5 The ad with this spokesperson was informative

◯ Strongly Disagree

◯ Somewhat Disagree

◯ Disagree

◯ Neutral

◯ Agree

◯ Somewhat Agree

◯ Strongly Agree

PE 6 The ad with this spokesperson was meaningful

◯ Strongly Disagree

◯ Somewhat Disagree

◯ Disagree

◯ Neutral

◯ Agree

◯ Somewhat Agree

◯ Strongly Agree

Start of Block: E-Cigarettes Attitudes

Att E-Cig Just before you go, please indicate your impression of e-cigarettes use. The closer to any of the word pairs, the stronger your affirmation.

In my opinion, Using E-cigarettes is..

	1	2	3	4	5	6	7	
Unejoyable	○	○	○	○	○	○	○	Enjoyable
Unhealthy	○	○	○	○	○	○	○	Healthy
Dangerous	○	○	○	○	○	○	○	Safe
Boring	○	○	○	○	○	○	○	Fun
Stupid	○	○	○	○	○	○	○	Smart
Not Cool	○	○	○	○	○	○	○	Cool
Not Attractive	○	○	○	○	○	○	○	Attractive

Start of Block: Demographics

Age Indicate your age.

○ 18-21

○ 22-26

○ 27-34

Gender Indicate your gender

○ Male

○ Female

○ Others (Please specify) _____

Education What is the highest degree or level of education you have completed?

○ Less than high school degree

○ High school degree or equivalent (e.g., GED)

○ Some college but no degree or Associate's degree

○ Bachelor's degree

○ Graduate degree

Smoking Status Have you ever tried e-cigarettes?

○ Yes

○ No

○ Maybe